

ELGINHAUGH: A FLAVIAN FORT AND ITS ANNEXE

ELGINHAUGH: A FLAVIAN FORT AND ITS ANNEXE

VOLUME 1

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Cover illustration: Construction trenches of Barrack 2 looking east from the officers' end, showing the orange staining in the front room of several *contubernia* indicating where the horses were stabled.
Photograph: K. Speller

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CHAPTER 1

INTRODUCTION

1.1 DISCOVERY AND LOCATION

The Roman fort at Elginhaugh (NT 322674) near Dalkeith in Lothian Region was discovered from the air in the dry summer of 1979 by the Royal Commission on the Ancient and Historical Monuments of Scotland. The fort was defined by parchmarks in the grass above some of the roads within it, rather than by positive cropmarks of its surrounding ditches (PLATE 1.1). Accordingly, the site was not immediately recognisable as a Roman fort and trial trenching was necessary to confirm the identification.

Small-scale work by Gordon Maxwell in December 1979 achieved this end, confirming the survival of a clay rampart, metalled roads, ovens and the construction trenches of timber buildings. Only one phase of Roman occupation was indicated, dated by pottery finds to the late first century A.D. (Maxwell 1983a, 173–4). However, some pre-Roman Iron Age pottery was also recovered, suggesting the presence of a native settlement beneath the fort.

Subsequent aerial reconnaissance by the RCAHMS revealed traces of other activity around the fort. A number of ditches, showing as positive cropmarks, indicated the presence of an annexe or annexes attached to its north-west side, and the outline of the stone walls of a bathhouse, showing as a parchmark in the grass, was recorded in the next field to the south by



PLATE 1.1 Aerial photograph of the site in 1979 showing Roman road with T-junction; view north-west

the river (PLATES 1.2 and 1.3). The latter was subject to trial excavation in the early winter of 1984 (below Chapter 9).

Various other sites have been discovered from the air in the immediate vicinity, including at least three Roman temporary camps, a pit alignment of Iron Age date (Barber 1985), a defended enclosure probably of similar date and two palisaded enclosures of slightly earlier date (Raisen and Rees 1995) (FIG. 1.1). The smallest of the three Roman camps may have housed the workforce responsible for the construction of the fort. The larger camps across the river relate to Roman campaigning, probably of second or third-century A.D. date (Maxfield 1974).

The fort is situated at a height of *c.* 70m O.D. on the flat crest of a steep scarp overlooking the river North Esk some 2.5km (1.5 miles) south-west of its confluence with the South Esk. It was preserved in a small triangle of semi-permanent pasture edged by plantation and bounded to the north-west by a road, to the north-east by a now dismantled railway line and to the south by a combination of road and river (FIG. 1.1). Very little survived on the surface, though traces of a subrectangular platform defined by the levelled fort-rampart were faintly visible to the discerning eye. All other surface remains had been removed by ploughing over a lengthy period. The site had been under pasture for some years, but prior to that, within living memory, had been a market garden. The subsoil consists of banded sands and silty clay (below 11.5) with, as a result, considerable differential drainage and a perched water-table.

The fort straddles what was at the time of its discovery the most northerly identified stretch of Dere Street. This Roman road ran north from York via the important base at Newstead in Tweeddale. Beyond Elginhaugh, Dere Street seems to be heading north-west following the line of the modern A7 before turning sharply northwards pointing towards Edinburgh Castle Rock. It would then presumably have turned west via Gogar, where temporary camps have been identified, and Ingliston, where a Roman milestone has been recorded (Maxwell 1983a, 175; 1983b, 382), towards the fort at Camelon and the crossing of the Carron.

There can be little doubt that Elginhaugh was located to guard a river crossing, either by bridge or ford, since the North Esk is fordable in the immediate vicinity. The close juxtaposition of fort and the crossing of that river by three modern arterial routes, the A68, the A7 and the now dismantled railway line, emphasise the strategic importance of this bridgehead position. That it continued to be so in the centuries immediately following the abandonment of the fort is confirmed by the discovery of the two Roman temporary camps, noted above, at Eskbank on the opposite bank of the river (Maxfield 1974).

1.2 EXCAVATION STRATEGY

The field in which the fort lay was purchased for development by the Scottish Development Agency. Historic Scotland (then known as Historic Buildings and Monuments, Scottish Development Department) decided that excavation was necessary, arranged for funding and invited the primary author to direct the project. After the excavation had been completed, the site was bought by the Scottish Widows Fund and Life Assurance Society who constructed their computer data centre there, though the site is now owned by the Royal Bank of Scotland. At the time of the excavation, however, the exact location and extent of the proposed development was unknown, so that potentially the whole 4.8ha (12 acre) field was threatened. Accordingly, Historic Scotland wished to examine as much of the field as was possible within the constraints of time and resources and, in discussion with the primary author, five priorities were identified: the plan and development of the fort; the plan and development of the postulated Iron Age settlement beneath it; the nature of features outside the fort; the nature and development of the local environment; and the post-Roman use of the site (Hanson and Breeze 1986).

Since it was recognised that total excavation of such a large area in the time originally available (seven months) was not feasible, the methodology employed was to strip the area by machine in order to recover basic plan information and then excavate selectively in order to test relationships, recover dateable material and take samples. Recognising that such a strategy posed an additional threat to any remains of the post-Roman use of the site, particularly any



PLATE 1.2 Aerial photograph of the site in 1984 showing the main Roman road, *intervallum* road and annexe ditches (Crown copyright: © Royal Commission on the Ancient and Historical Monuments of Scotland); view west

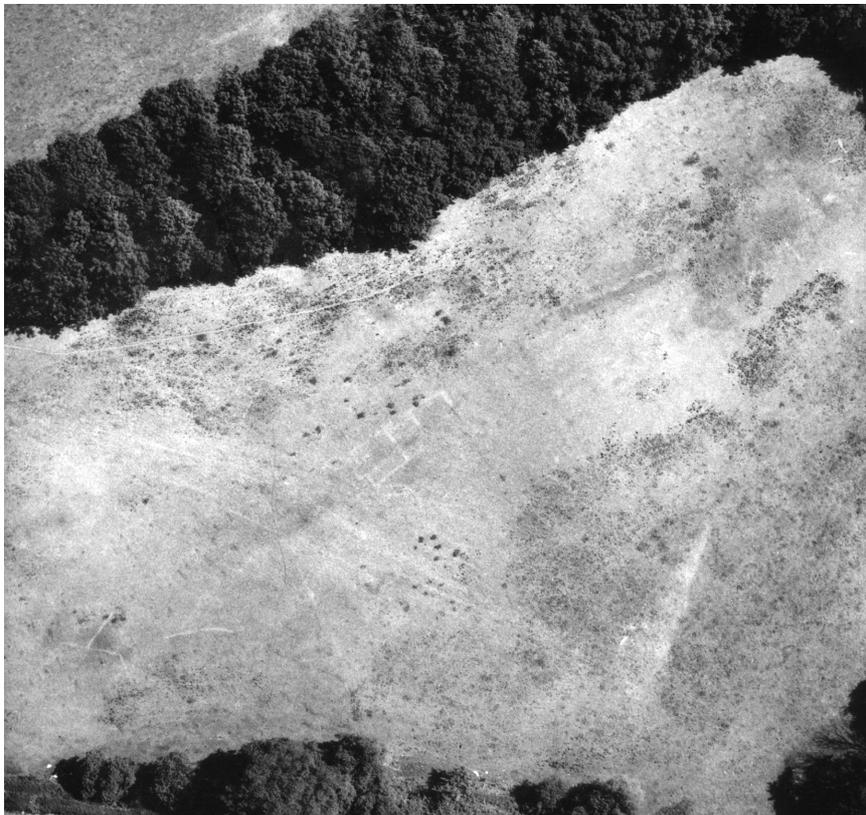


PLATE 1.3 Aerial photograph showing the parchmarks of the stone walls of the bathhouse (Crown copyright: © Royal Commission on the Ancient and Historical Monuments of Scotland); view north

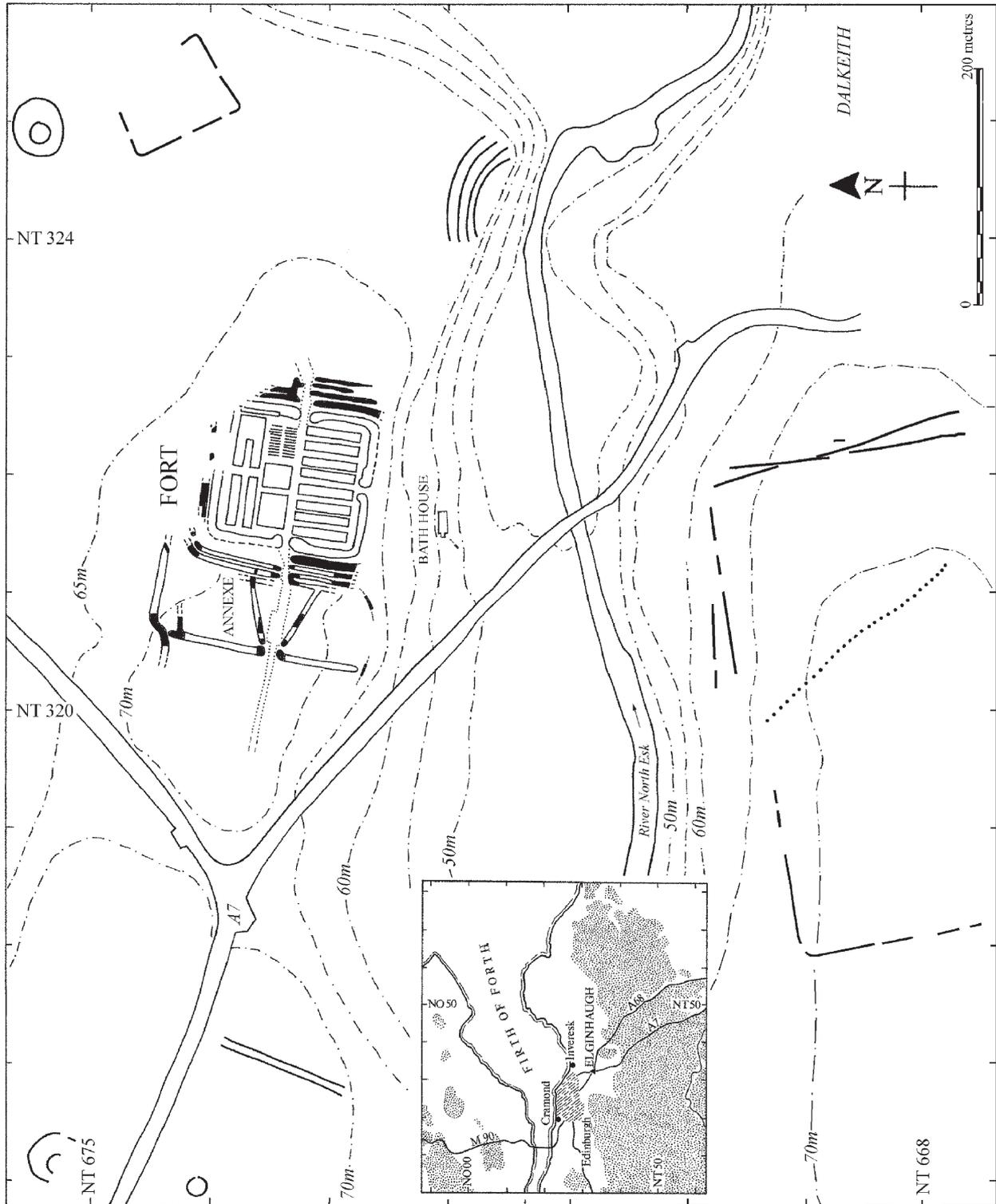


FIG. 1. Elginhaugh, Midlothian: location plans

artefactual remains in the ploughsoil, the field was shallow-ploughed and harrowed to facilitate fieldwalking (below 2.1) before machine stripping began on 1 April 1986.

To avoid the inconvenience and expense of removing spoil from the site only to return it later, it was decided to strip the field in three stages. Attention was first directed to the site of the fort itself so that some familiarity with the form and state of preservation of the archaeological remains might be gained where buildings were known to exist, before turning to the less predictable areas beyond. A limited area to the east of the fort was included in the first stage for purely logistical reasons, as access would have been difficult once the fort area had been stripped. Stage 2 was to have been the examination of the annexe to the west of the fort and Stage 3, the lowest priority, the area to the north where the ground sloped away and nothing was visible on any of the aerial photographs.

In the event neither time nor finances allowed complete stripping of the field. Two major problems were encountered with the machine stripping which resulted in serious delays and a considerable increase in expenditure. The combination of high rainfall in April and May 1986 and the poorly draining silty clay soils across much of the site (below 11.4 and 11.5) meant that machining was slower and subject to more delays than was anticipated. In addition, the heavily worm-sorted upper soil horizon effectively masked the changes of texture and colour which normally facilitate the recognition of disturbance of the soil by human agencies (below 11.4). Thus negative archaeological features were virtually invisible despite careful cleaning which revealed only the roads and surviving drains (PLATE 1.4). Even when limited areas within the fort were taken down further by hand in shallow spits, for example across what subsequently was identified as the officers' quarters of Barrack 5, the construction trenches of buildings remained stubbornly undetectable. The one exception was in the north-west corner of the fort across Barracks 1 and 2 where ploughing had already removed the worm-sorted horizon, including all road surfaces and even drains. Accordingly it became necessary to remove a further 0.2–0.4m by machine across the rest of the area of the fort, working out from these visible traces, before even its ditches began to appear. In addition, this secondary machining added considerably both to the costs and to the time taken to establish the plan of the fort, so that in 1986 the excavation did not progress beyond Stage 1.

Appreciating the academic importance of some examination of the annexe, additional funds were made available by Historic Scotland in 1987 and further access to the site was kindly allowed by the Scottish Development Agency. Thus excavation recommenced in June 1987 for two months. Both the more limited funds and the restricted timescale required a different strategy to be adopted, with more selective excavation within the annexe, based on information from aerial photographs and magnetometer survey (below 2.2 and FIG. 2.3). Large trenches were laid out and the topsoil removed by machine. Key points around the defensive perimeter of the annexe were investigated, while examination of the interior focused on the line of the road from the west gate of the fort. Nonetheless, by the end of 1987 a total of some 2.4ha (6 acres) of the field had been examined by excavation (FIG. 1.2), making Elginhaugh one of the largest rescue excavation projects ever undertaken in Scotland.

Finally, in February and March 1989 a watching brief was undertaken by John Terry in the adjacent field to the south of the fort during the installation of drainage pipes for the ongoing development. The opportunity was also taken to dig by hand two small trenches to address specific questions about the southern perimeter and internal subdivision of the annexe.

1.3 RECORDING METHODS

Recognising that the timescale for the excavation of such a large area was always likely to be tight, it was determined that the most advanced recording techniques would be applied in order to streamline the process as much as possible. In particular this involved on-site computer recording of contexts and finds, including their three-dimensional location established by Electronic Distance Measurer (EDM), using a system developed by Dominic Powlesland (1986), and the use of video recording as an integral part of the photographic record (Hanson and Rahtz 1988). Since the use of these techniques remains relatively uncommon and,

moreover, has had considerable impact, not just on the post-excavation process generally, but on some of the questions asked of the data, it seemed appropriate to outline them briefly here.

All primary context records were created by direct input on-site into small hand-held computers which were regularly down-loaded onto floppy disk and printed out for ease of reference and editing. All primary finds records, including preliminary identification, were similarly created as the finds went through standard processing procedures. The three-dimensional location of all finds and contexts was determined by EDM and separately recorded on site on a hand-held computer. At an early stage of the post-excavation process the various floppy disks, including those containing locational information, were amalgamated into a single database which facilitated sorting across any of the basic data fields. Though the site plans were generated in the normal way, they were digitised at an early stage of the post-excavation process to facilitate the easy production of plans at any scale and to allow their integration with computer-generated artefact distributions using Dominic Powlesland's G-Sys geographical information system software. This provides a powerful analytical tool whose full potential has undoubtedly not been reached in the following pages, but the database remains available for further manipulation in the future.

During the course of the excavation, video recording in high quality analogue format (low



PLATE 1.4 View across the fort after first stage machine stripping and manual cleaning, with only the *via principalis* and adjacent drain visible; view east



FIG. 1.2 All excavated features

band U-matic) was used to replace much of the standard black and white photographic record. In addition to any set-piece shots of areas or features taken before and after excavation, any on-going work was also recorded, usually on a twice-daily basis, to produce what was in effect a video diary of the excavation with built-in commentary. As a result a total of over 24 hours of video was recorded. This primary record proved to be of immense value during the preliminary stages of post-excavation analysis, allowing many of the various questions and uncertainties about relationships, which always arise after the excavation has been completed, to be checked or reviewed. Moreover, as with the computerised database, it provides a uniquely detailed archive of the progress of the excavation.

Because of the constraints of both time and resources brought about by the problems referred to in 1.2 above, the strategy eventually adopted for the recovery of ecofacts was a more pragmatic one than originally intended. Pollen cores were extracted from beneath roads and ramparts and from waterlogged contexts, and samples were also taken for macroplant analysis from the latter. Fortuitously, the number of waterlogged contexts on site exceeded expectations. However, the flotation of samples was not extended to all excavated features, but applied only to those with some reasonable expectation of the recovery of carbonised remains, particularly pits and burnt features. Post-holes and construction trenches were not sampled as a matter of routine, except in the granaries. Samples were processed on site using a Cambridge flotation machine. Floated material was collected in 1mm and 0.3mm sieves and the residue in a 0.5mm mesh. In all over 300 contexts were sampled, though only those which produced some meaningful result are discussed in this report. Unfortunately, the soil conditions were generally unfavourable to the survival of bone and, therefore, no substantial assemblage of material was recovered.

1.4 STRUCTURE OF THE REPORT

Because of the size of the report, it has been split into two volumes, the first dealing with the structural evidence, the second with the finds and synthesis. The first volume starts with a brief review of the evidence provided by pre-excavation survey (Chapter 2), followed by a full consideration of the structural remains of prehistoric date from Mesolithic through Neolithic and Bronze Age to Iron Age (Chapter 3). The associated prehistoric artefacts and ecofacts are considered in Chapters 10 and 11. Within the description of the fort that follows, the structures in Volume 2 have been dealt with individually or as functionally associated groups. This starts with the central range (Chapter 4), dealing with the *principia*, *praetorium* and granaries, before moving on to the barracks and other structures, firstly at the rear of the fort in the *retentura* (Chapter 5) and then at the front in the *praetentura* (Chapter 6). Finally, the defences, roads, drains and ovens are dealt with separately (Chapter 7).

For each structure or group of structures the same approach has been adopted. A descriptive section dealing with the primary phase of use is followed by one which examines the interpretation and identification of the structure, and provides appropriate analogies. When describing buildings, overall measurements quoted are external, that is measured from just outside the mid-point of the construction trenches or the outside of post-impressions where they survive. The intention here is to provide measurements which equate as closely as possible with the likely external dimensions of the buildings. Measurements from either the inner or outer edges of the construction trenches would tend to under or over-estimate those dimensions. Where rooms within a building are described, the same principles are applied to estimate the internal dimensions, i.e. measurements have been taken from just inside the mid-point of the construction trenches or the inside of post-impressions where they survive. Once again this is designed to reflect normal practice for standing buildings and also to ensure that estimates of room capacity are not inflated. Average dimensions are usually quoted, since, as is clear from the site plans, the layout of the buildings was frequently irregular. Variations from that average are noted only where they are substantial. In describing barrack blocks the *contubernia* are numbered starting from the inner end of the block, that is the end adjacent to the officers' quarters. To facilitate comparisons, the plans of individual buildings or groups of

buildings are reproduced at a standard scale of 1:200, with the exception of the gates and the prehistoric features (1:100). Comparative plans of individual buildings from other sites are reproduced at a scale of 1:400, with the exception of the gates at 1:250. Sections of pits and structural features and two small detailed plans are reproduced at a scale of 1:20; sections of roads and ditches, along with most plans of detailed features, at 1:40.

The nature of the construction method employed is then discussed and the main aspects of the likely reconstruction commented upon, before considering the stratigraphic evidence for the different phases of the structure, including demolition and the post-abandonment use of the area. Finally, all stratified groups of finds related to the structure or structures are briefly listed to indicate the nature of the associated material culture and allow ready cross-referencing from structures to finds.

A variant on this approach is adopted for the examination of the annexe (Chapter 8), which follows on from the fort, because changes of use there were more frequent and the primary phase functionally less dominant. The same basic divisions of the text are maintained, but are further subdivided by phase with the sub-section on stratigraphy and phasing devoted to explaining the basis for the phasing adopted. The discussion is not subdivided by excavation trench, since otherwise this would impose onto the report a largely arbitrary and predetermined structure. Such an approach is all too easily used as an excuse for failing to correlate results from different areas of the site. Thus reference to the individual trenches is used only as an aid to location of the features under discussion or as an explanation for the limited examination of such features.

In order to ensure that all work at the site was brought together in the same publication, Gordon Maxwell kindly provided a report on his limited examination of the bathhouse (Chapter 9). This follows a similar layout to that outlined above.

Many specialists have kindly contributed reports on the finds, both artefacts and ecofacts, both Roman and prehistoric material. These constitute the bulk of Volume 2 (Chapters 10 and 11). Whilst maintaining the integrity of each specialist's contribution in terms of the material under consideration, great care has been taken to ensure that the report is extensively cross-referenced to allow easy correlation in both directions between finds catalogue and structures.

As far as possible the original context numbering and finds lettering system has been maintained. This allows all finds to be related back to the context from which they derive quite easily, since the context number is the primary element of the record for each find. Thus, the full record for a particular object might be 1AC 1428 AF. This is a unique reference for one find, in this case a piece of waterlogged structural timber from the construction shaft of the well in the *principia*. This record breaks down as follows:

season of excavation (1),
100m grid square within the overall site grid (AC) (FIG. 1.3),
context number (1428),
and specific find from that context (AF).

The context number itself is not unique, since the numbering system was begun afresh in the second season, but where the context of the discussion is unambiguous, such as in chapters concerned with particular buildings within the fort, both the season and grid square designations become superfluous and have been omitted from the text. The context numbers were generally not started afresh in each grid square, though numbers were replicated in different squares where a particular layer extended across more than one. Thus 1 AC 15 and 1 BB 15 represent different parts of the same widespread demolition layer.

The report ends with a discussion of the overall interpretation of the fort, focusing on its chronology and probable garrison, and of the annexe, locating both within their local environmental and wider historical context (Chapter 12). The bibliography for the report is located at the start of Volume 1.

The conventions used in plans and sections are explained in FIG. 1.4.

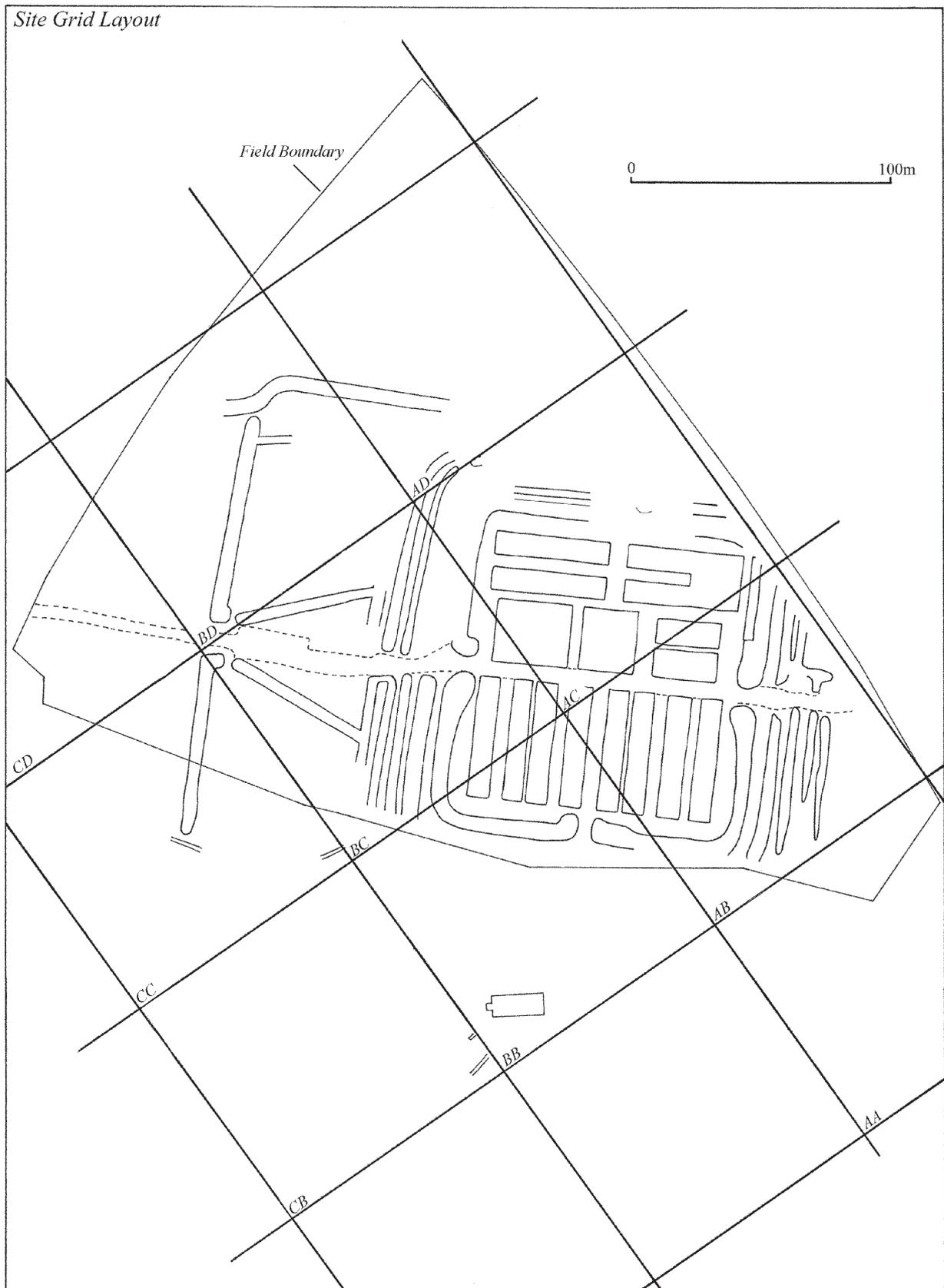
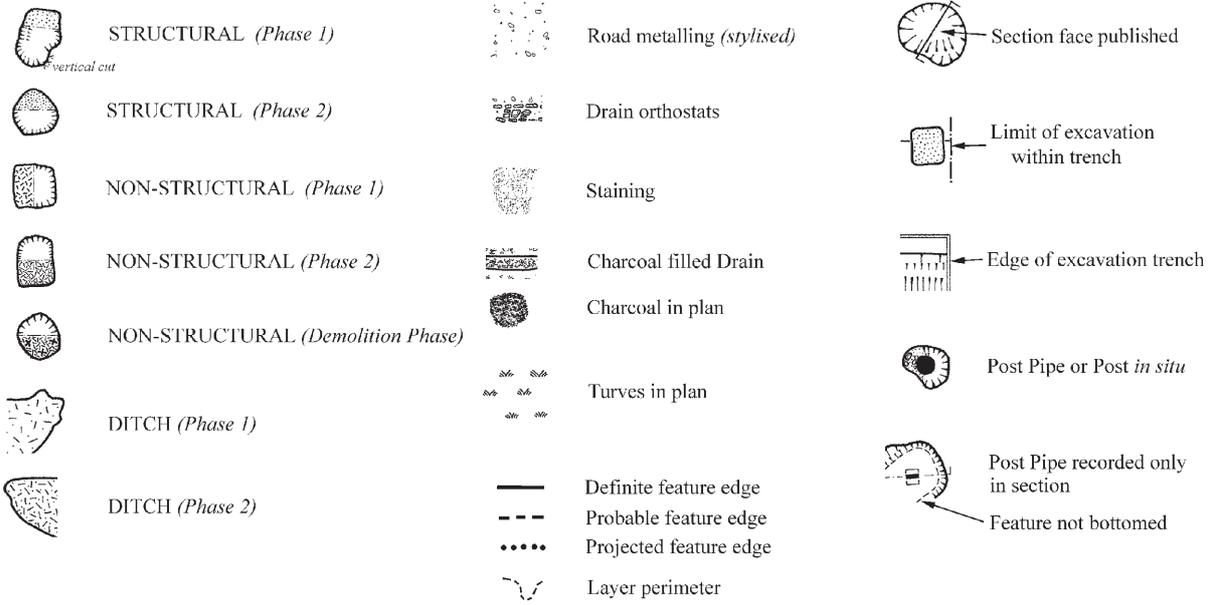


FIG. 1.3 Excavation recording grid in relation to the plan of the fort and annexe

NOTE: For clarity, some illustrations carry their own key

Plans



Sections

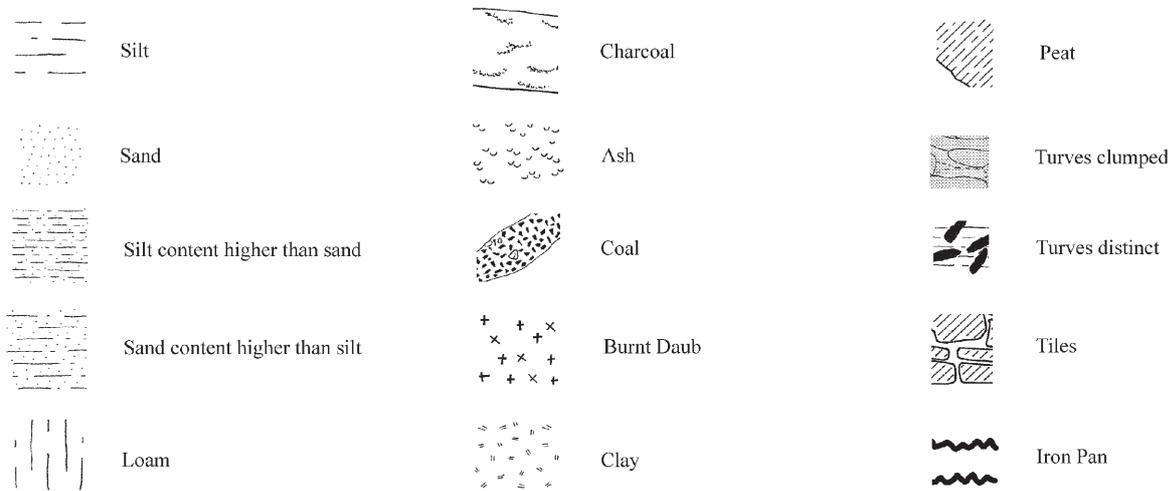


FIG. 1.4 Key to illustrations of plans and sections

CHAPTER 2

PRE-EXCAVATION SURVEY

2.1 FIELDWALKING

Fieldwalking was undertaken by a group of Glasgow University students over a week in late March 1986, in an attempt to minimise the loss of artefacts which was the inevitable concomitant of the need to remove the ploughsoil by machine. Since it had been under pasture for some time, the field (above 1.2) was first shallow-ploughed and harrowed to facilitate artefact recovery. The artefacts recovered were identified and plotted within a 5m grid by Dr Christopher Kelly (FIG. 2.1). After the excavation of the fort had commenced, the ploughsoil above the area of annexe was further investigated with the assistance of the Scottish Detector Club based in Edinburgh, through the good auspices of Mr W. Baptie. This resulted in an increase in the recovery of metal finds, including two badly corroded coins from the area of the annexe, an *as* of Vespasian and a fragmentary Flavian dupondius or *as* (below 10.1.1, nos 33 and 49).

There was a general scatter of Roman material across the whole field, including outside the area of the fort and annexe. Much of the material was of Roman date, though one sherd of prehistoric pottery was recovered at the western end of the field and medieval/post-medieval pottery was widely recorded. Undiagnostic or undateable items, such as nails and shells, have not been included in the published plot. There was little sign of clustering, though there was a surprising paucity of material from the centre of the fort and from its south-west corner.

2.2 GEOPHYSICAL SURVEY

By J.A. Gater and S.J. Dockrill

INTRODUCTION

The aim of survey was to examine the area of the fort annexe. It was hoped that detailed magnetometry would help with the planning of the 1987 excavation programme and provide additional background information about the nature of the site.

The magnetometer survey was undertaken with a Philpot Fluxgate Gradiometer AM01 and the resistivity survey with a Geoscan RM4 with twin-probe at 0.5m separation. Magnetometer readings were logged automatically at 1m intervals using a Geoscan DL10 and then transferred to an Epson HX20 computer. Dot-density plots were produced in the field and further processed on a base computer.

In view of the type of features expected, mainly ditches and pits, detailed magnetometry was carried out over a large area of the annexe, but only limited resistivity was undertaken with the aim of confirming the line of Dere Street (FIG. 2.2). During two days in the field in late May some 30 20m grid squares were examined, a total of 12,000 individual readings, though the rate of the progress was hindered by the terrain problems referred to below.

In general, the site at Elginhaugh responded quite well to the survey and several features of potential interest were recorded. Unfortunately the state of the ground (old plough furrows, deep wheel-ruts and tall weeds) resulted in an increased background noise, due to the inability to maintain the magnetometer in a vertical position. In addition, the presence of igneous rocks

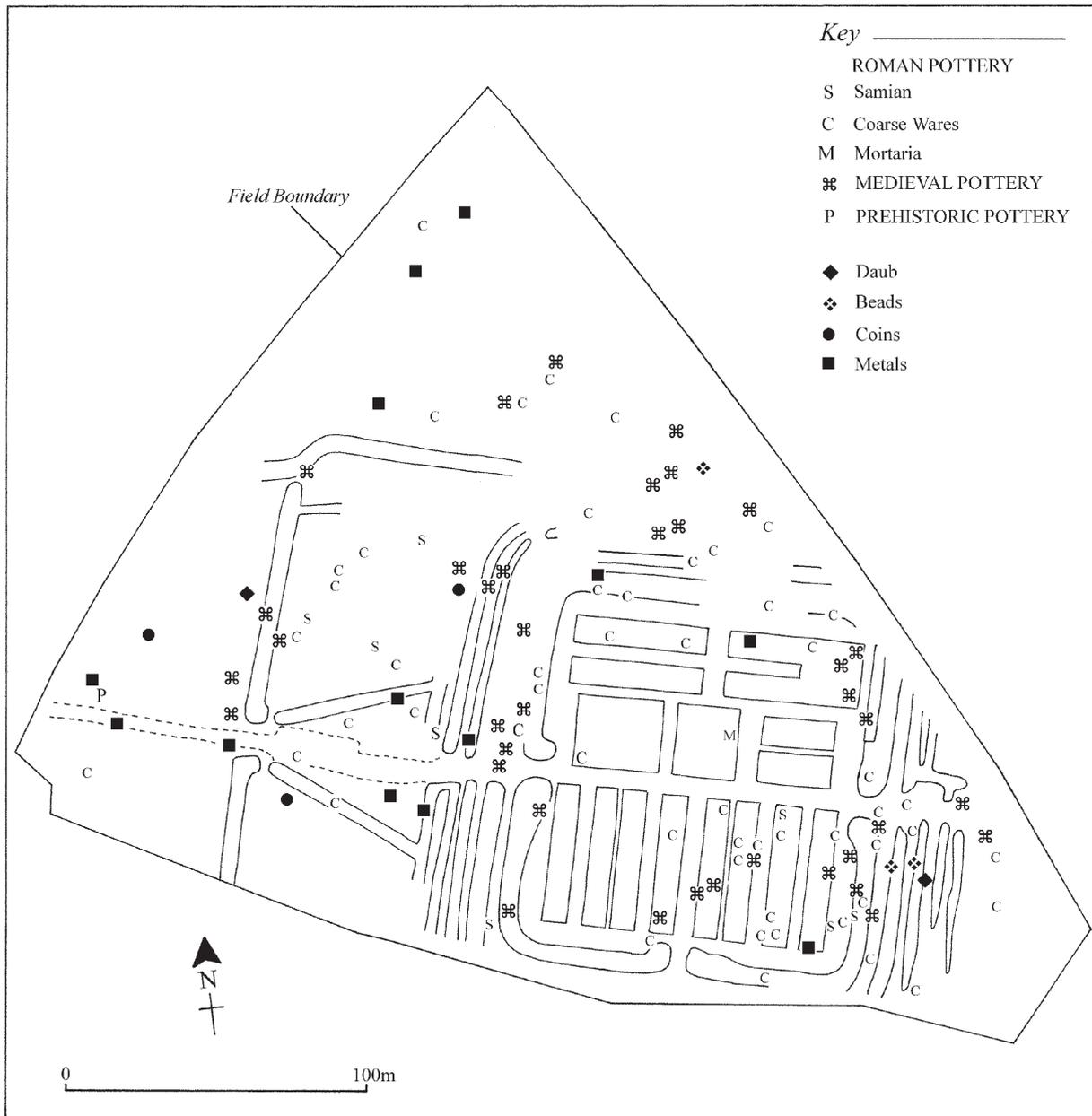


FIG. 2.1 Distribution of finds from fieldwalking

and stray ferrous objects in the topsoil resulted in many magnetic anomalies, and it is very difficult to differentiate between these and archaeological anomalies.

MAGNETOMETER SURVEY

The detailed plots (FIGS 2.3 and 2.4) confirm the picture obtained by scanning, namely a magnetically noisy site with many features of potential archaeological interest. The major features are shown in the interpretation plot (FIG. 2.5) and are referred to numerically in the following description. At the outset it should be borne in mind that the modern disturbances and the confused geology may be responsible for some of these features. In addition, many of the anomalies may correspond to features in the topsoil which could have been lost during mechanical stripping.

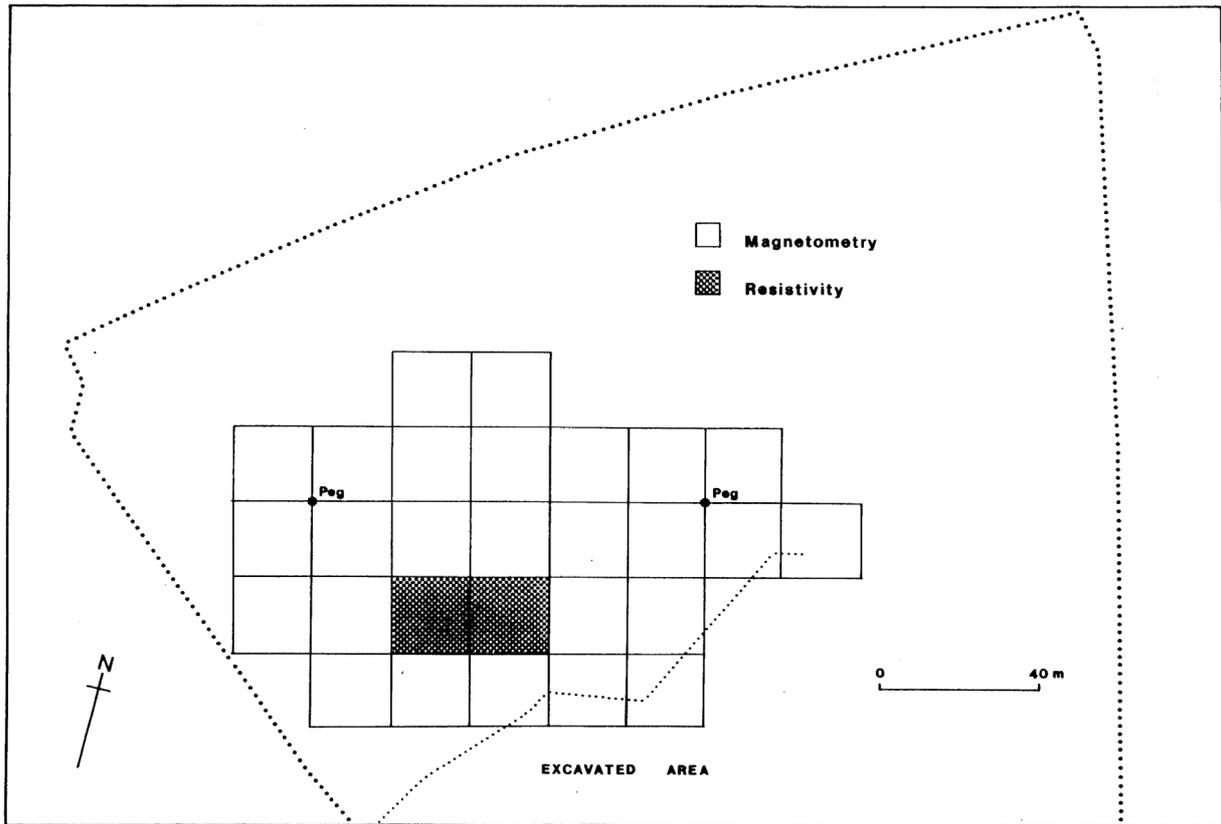


FIG. 2.2 Location of geophysical survey grid in the annexe for magnetometry and resistivity

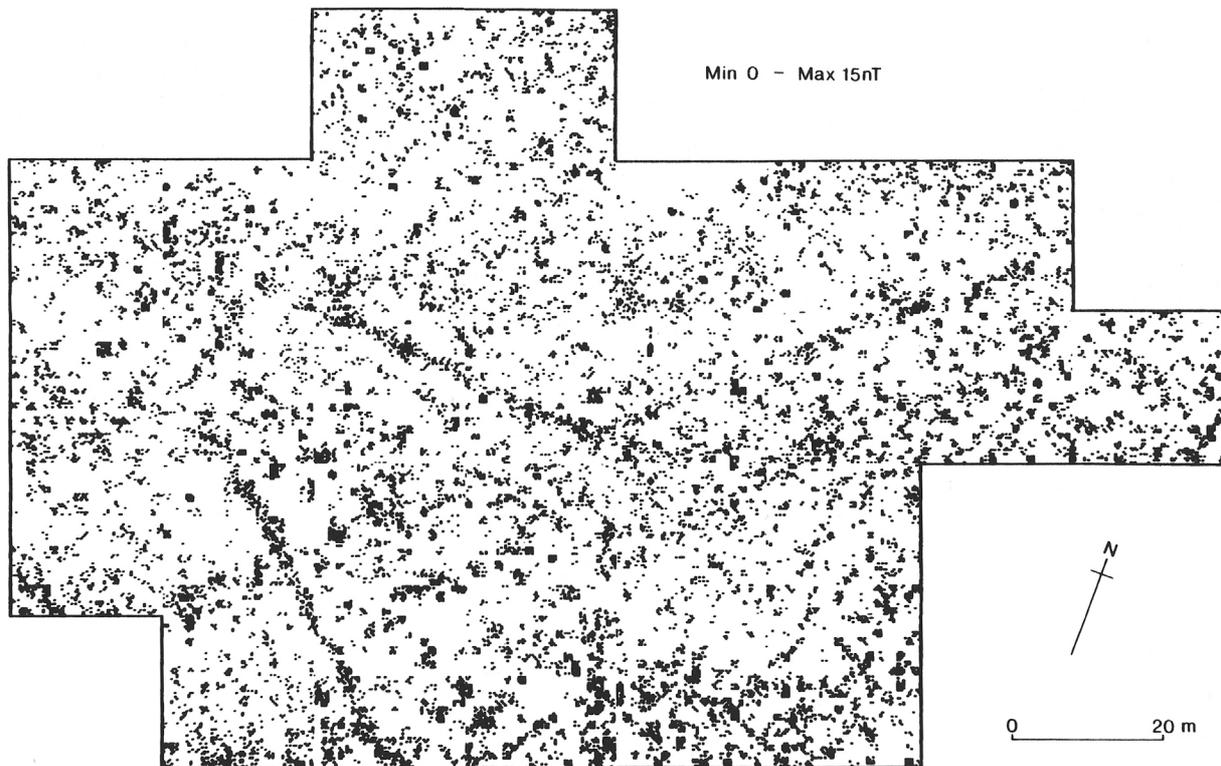


FIG. 2.3 Dot-density plot of magnetic anomalies in the central area of the annexe

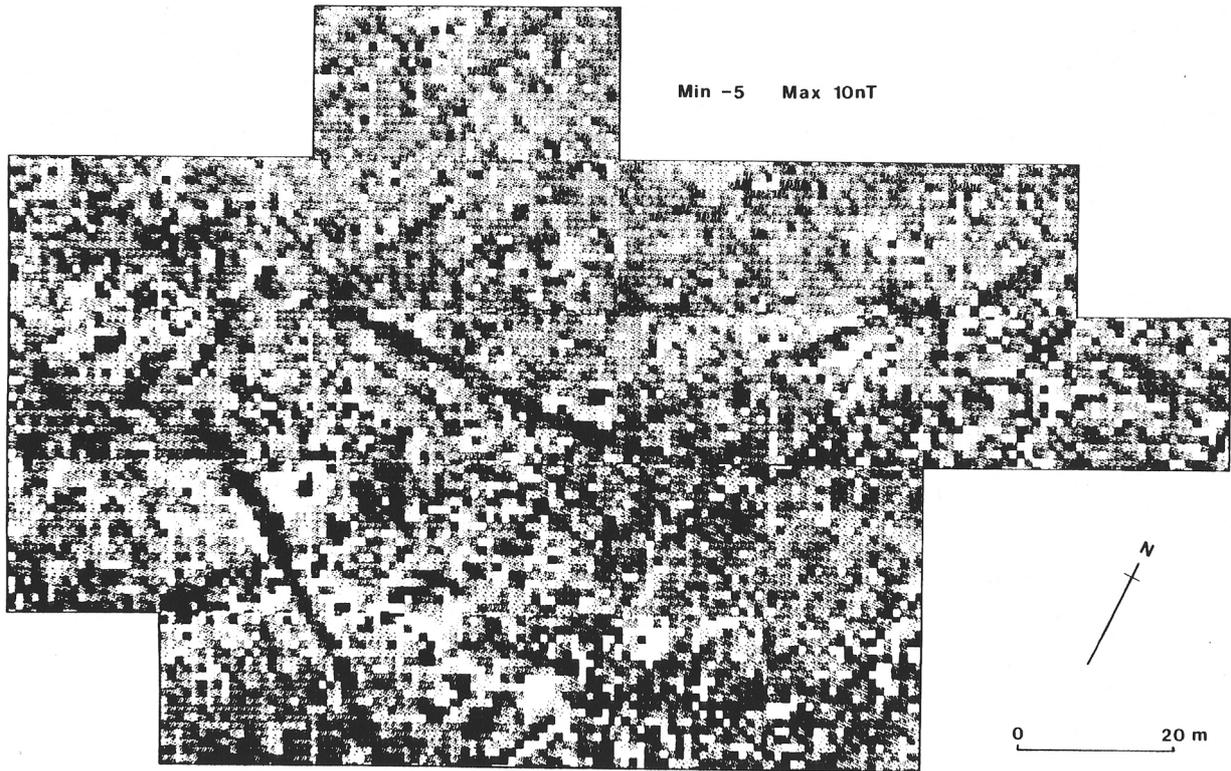


FIG. 2.4 Grey-scale plot of magnetic anomalies in the central area of the annexe

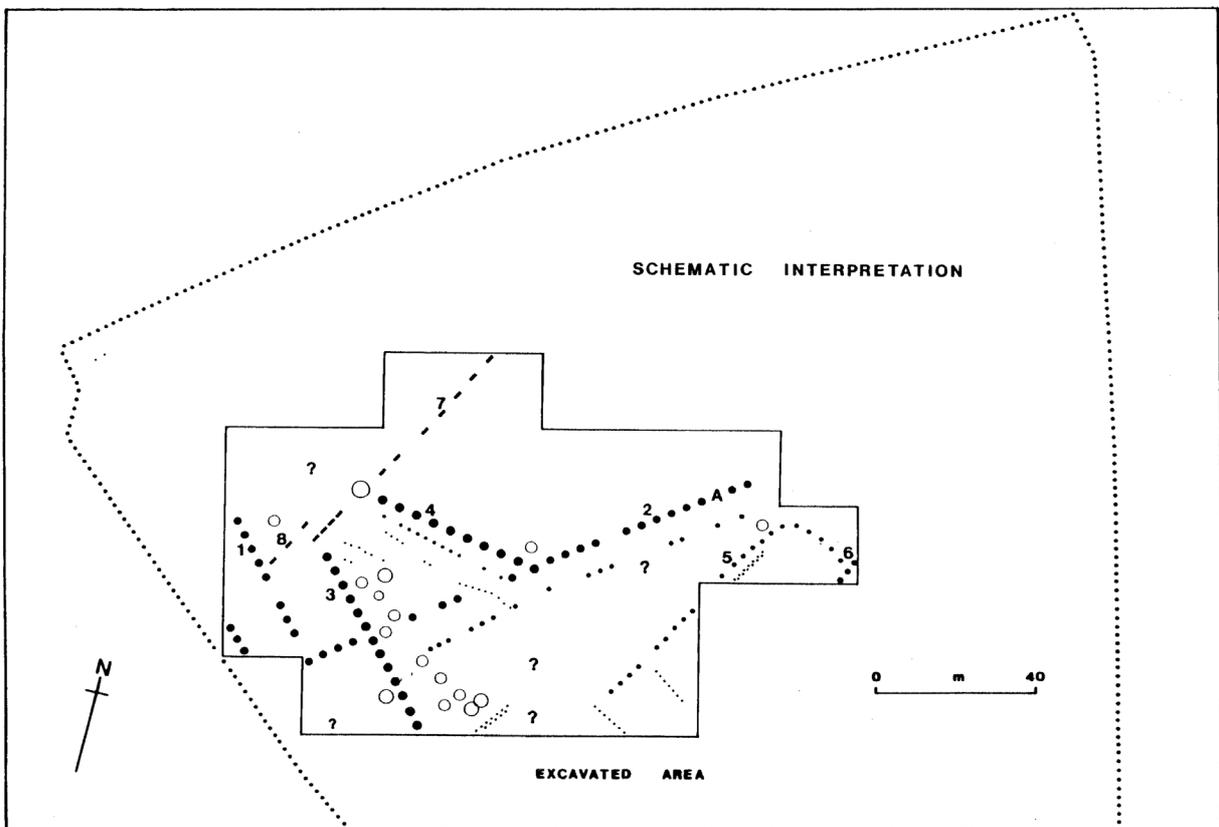
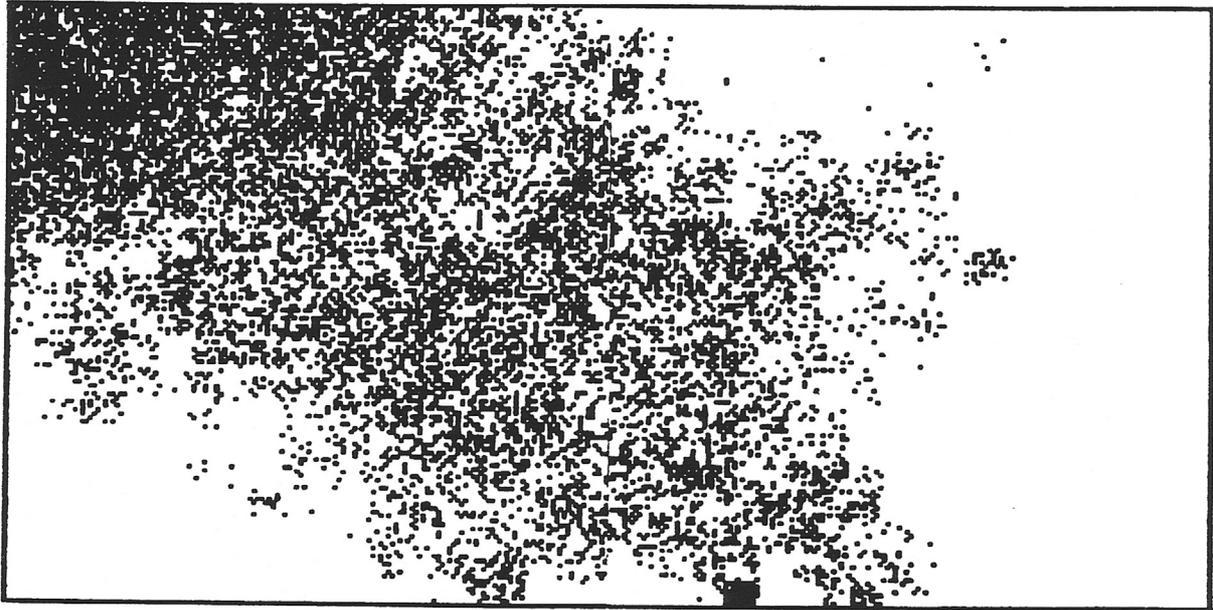


FIG. 2.5 Schematic interpretation of the geophysical survey

Linear ditches (FIG. 2.5: features 1–8) are most easily recognised, some more strongly than others. This is probably due to the differing amounts of rubbish in ditches, which accounts for the somewhat broken nature of the features. The ditches furthest away from the fort (7 and 8) are poorly defined, as is quite common on such sites. Where the initial natural magnetic contrast between the soil layers is weak, it is sometimes found that ditches and other features are clearly detectable close to dwellings, in this case the fort, where enhancement has occurred through the disposal of domestic refuse, but fade beyond the limits of the settlement. The strength of the anomaly is not necessarily indicative of the size of the feature, hence trends can be archaeologically significant. Interpretation is very subjective in such circumstances.

The differing alignments of the ditches are potentially of interest. The junctions warrant

(a)



(b)

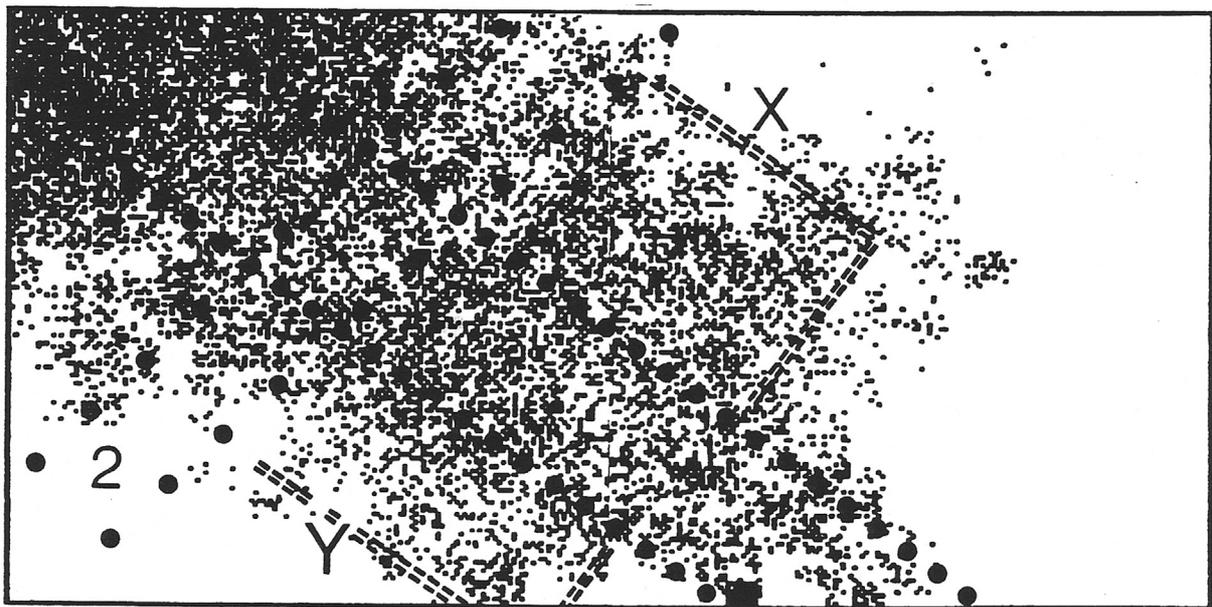


FIG. 2.6 Dot-density plot of the resistivity survey and its interpretation, for location see FIG. 2.2

investigation as the plots are not clear enough to allow the phases to be worked out. There is a possible entrance gap at A (Ditch 2), though the picture may have been confused by a small spoil heap at this point.

In addition to the linear features, there are numerous anomalies which appear to correspond to large pits, or possibly hearths or metalworking areas. A large group of pits is visible between the line of Dere Street and Ditch 3; others are scattered in an apparently random way.

Igneous rocks, as well as ferrous objects, can produce confusing anomalies. Tests were carried out on igneous samples found in the field and it was confirmed that these rocks were strongly magnetic and would be sufficient to account for some of the observed anomalies. For this reason it is difficult to be certain about the origin of many of the seemingly random anomalies.

The general increase in background noise, more clearly visible by the darker areas on the grey-scale plot (FIG. 2.4), is concentrated south of Ditches 2 and 4, and follows the broad line of Dere Street to the north-western limits of the survey area. The latter presumably reflects greater archaeological activity along the course of the road. Dere Street itself is not visible as a magnetic anomaly, but it is rare for the magnetometer to detect a road.

RESISTIVITY SURVEY

The results of the two sample grids are shown in FIG. 2.6. The high resistance anomalies match the course of Dere Street and suggest the presence of areas of interest adjacent to the road (X and Y on plots). The line of Ditch 2 is also visible, crossing the course of the road.

CHAPTER 3

PREHISTORIC REMAINS

By *W.S. Hanson and G. MacGregor*

3.1 DESCRIPTION

One of the priorities highlighted in the excavation strategy for the site (above 1.2) was the recovery of the plan and development of the postulated Iron Age settlement noted by Maxwell in his trial trenching (1983a, 173–4). During the course of the excavation considerable efforts were directed towards identifying the presence of prehistoric remains within the area of the fort and its annexe (FIG. 3.1). As a result, traces of Mesolithic, Neolithic and Bronze Age activity were recorded. It is particularly ironic, therefore, that no structural remains of probable Iron Age date were recovered, although artefactual evidence indicates the presence of such occupation in the vicinity.

MESOLITHIC

Large numbers of Mesolithic flints (below 10.13) were recovered from an approximately T-shaped area extending over some 17.5m² located beneath and to the west of the rampart of the fort to the west of Barrack 2. The distribution of material followed a distinctly linear pattern down the vertical axis of the T. The area was excavated in gridded spits 1m square, and 250mm deep (FIG. 3.2). However, constraints of time and resources prevented the examination of the whole area of Mesolithic activity, whose precise limits were, therefore, not fully defined. The soil from the spits was wet-sieved to maximise the recovery of the smaller fraction of the flint debris.

The precise stratigraphic context of the material remains uncertain. It proved difficult in the leached sandy soil to determine cut features or, indeed, to identify undisturbed deposits, and lithics were recovered from some layers that might otherwise have been taken to represent the subsoil. Thus, although stakeholes and shallow pits were postulated in the course of the excavation (FIG. 3.2: 1097, 1142, 1144, 1146, 2004, 2006, 2008, 2010 and 2138), none were convincing as man-made features. There was a notable absence of associated burning, though clearly there must have been a contemporary source of heat nearby since some 38% of the assemblage had been affected by burning or heat damage (10.13.3). One cereal grain and two possible fragments of burnt straw were recovered from one of the more general layers that was rich in lithics (1064). One of the postulated stakeholes (2006) was sampled and contained neither lithics nor carbonised material, though flints were recorded from two other postulated stakeholes (1144 and 2004).

EARLY NEOLITHIC

Within the north-east quadrant of the fort, partly sealed by the *intervallum* road and the *fabrica*, were a series of adjacent pits or hollows and more amorphous spreads (FIG. 3.3) distinguished by their dark grey/black colour, probably stained by burning (PLATE 3.1). Most produced evidence of Neolithic date either in the form of pottery or lithics (below 3.5, 10.12 and 10.13). An associated buried soil horizon (1254 and 1255) seems to have survived, through which the

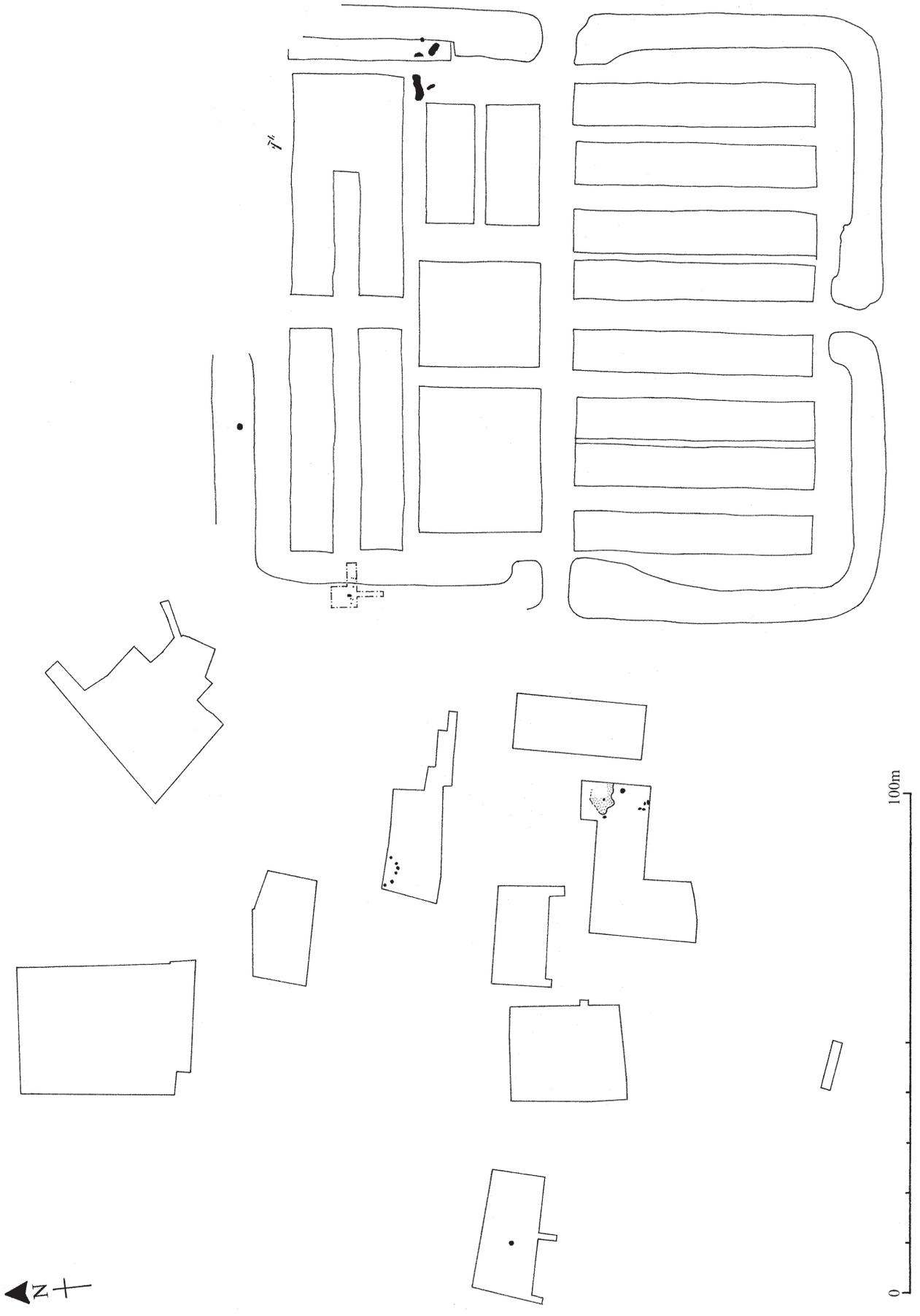


FIG. 3.1 Location plan of prehistoric remains

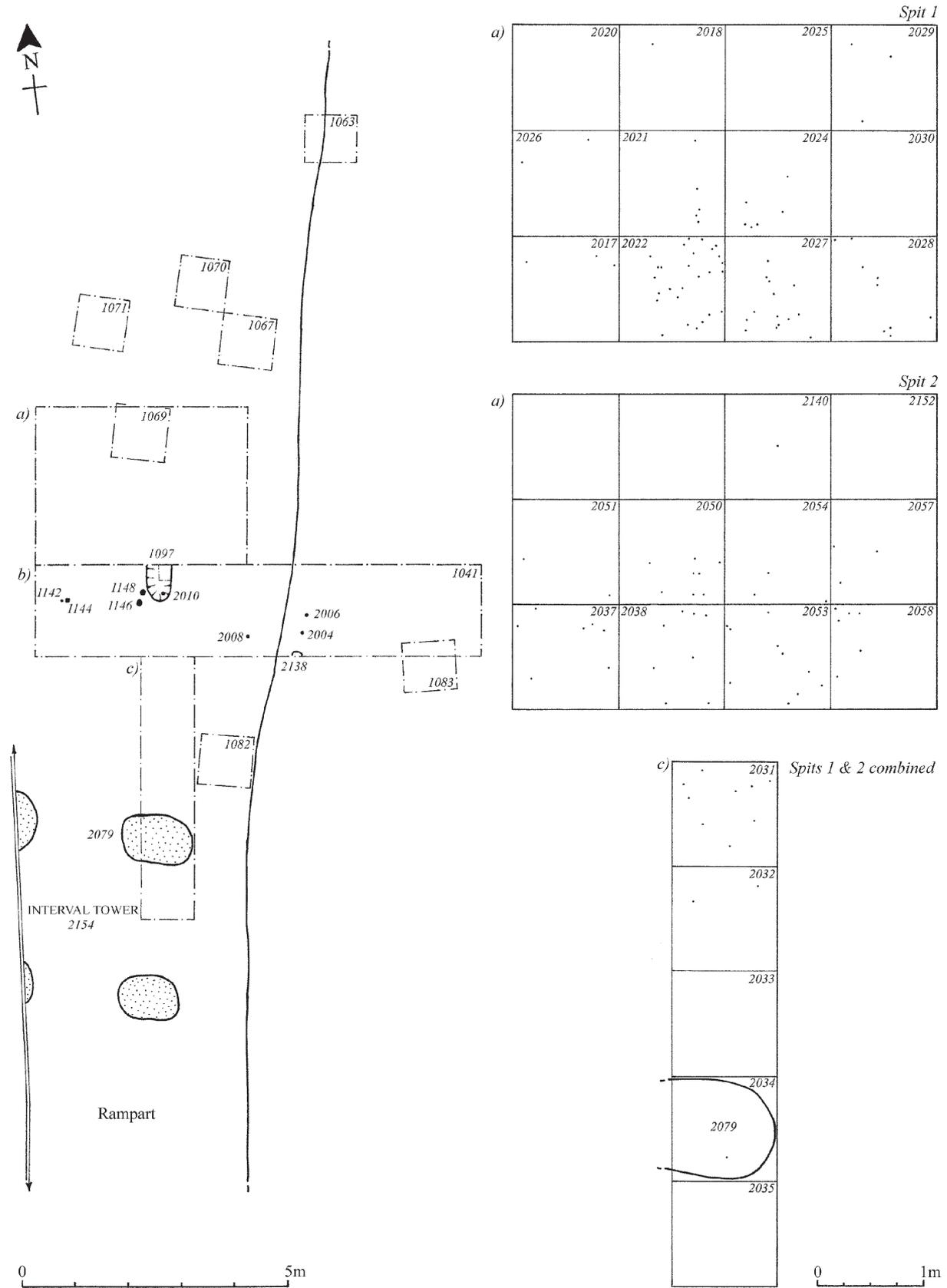


FIG. 3.2 Distribution plan of Mesolithic occupation evidence

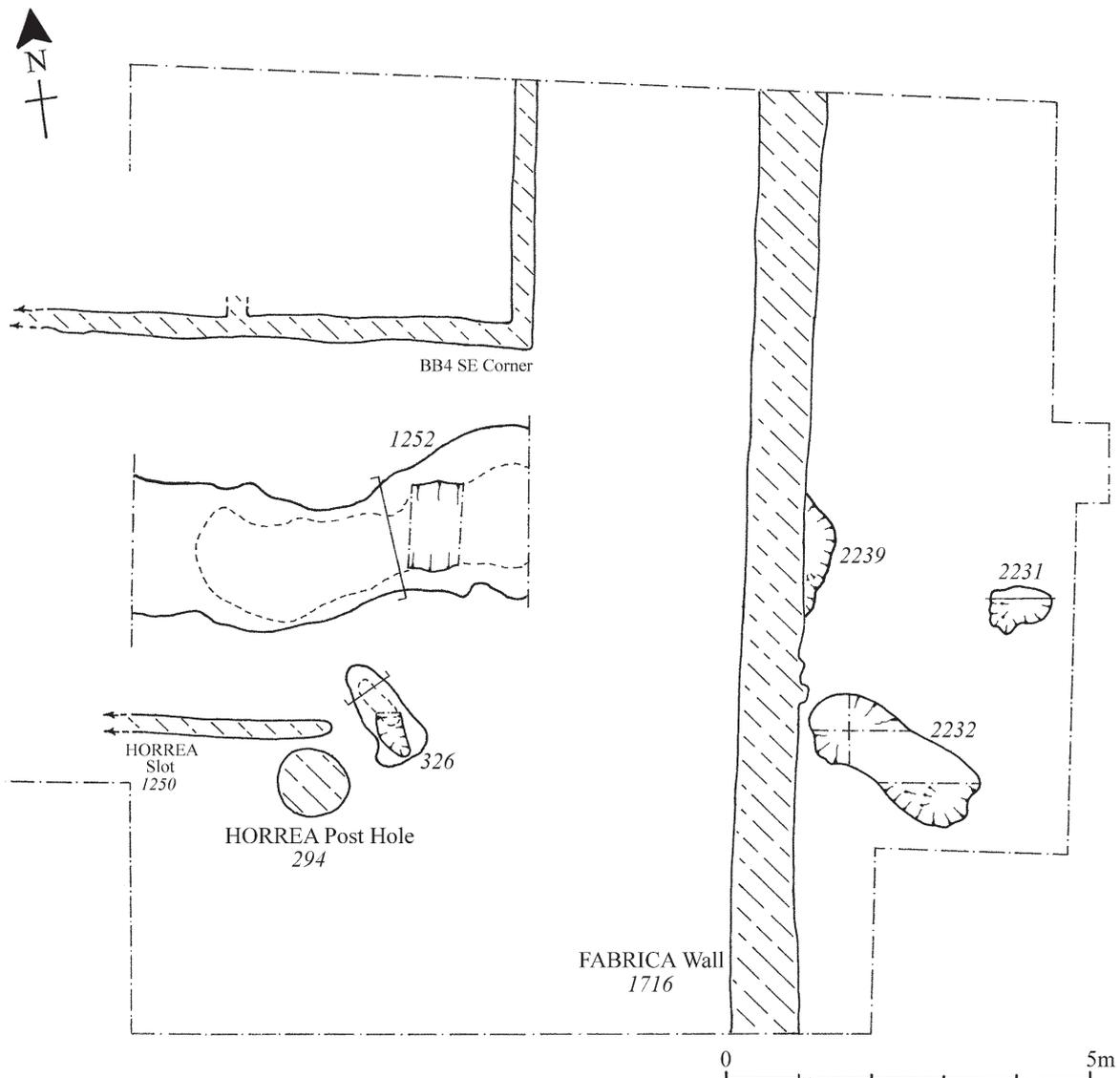


FIG. 3.3 Early Neolithic features, north-east quadrant of fort

pits were cut. It was particularly visible in the better preserved area sealed by the *intervallum* road, where spreads of bleached sand and silt were underlain by dark stained sandy material (below 11.4).

Pit 326 was oval and measured 1.6m by 0.53m. It was shallow, only surviving to a depth of 0.3m, with a bowl-shaped profile (FIG. 3.4a). Two separate fills of dark-stained, silty sand were distinguished, but the presence of pottery sherds from the same vessel in both suggests that their distinction does not have substantive chronological or functional significance. The lower fill was rich in charcoal and the upper very rich in carbonised cereal remains, mainly indeterminate cereal fragments, though both wheat and hulled barley were attested (below 11.2.2). Situated less than 1m to the north was a considerably larger pit or hollow (1252), measuring at least 5.3m by 1.4–2.3m, which was no more than 0.35m deep with a similar bowl-shaped profile (FIG. 3.4b). Its second fill was rich in charcoal, though charcoal was present in all three of its lower fills. Very little pottery was recovered, mainly in small fragments, but rather more flint and some carbonised cereals and remains of edible fruits (raspberry and bramble) came from the charcoal layer.

Pits 2231 and 2232 lay adjacent to each other some 5m to the east. Pit 2231 was subcircular and measured 0.85m in diameter but was, like pit 326, shallow with a bowl-shaped profile

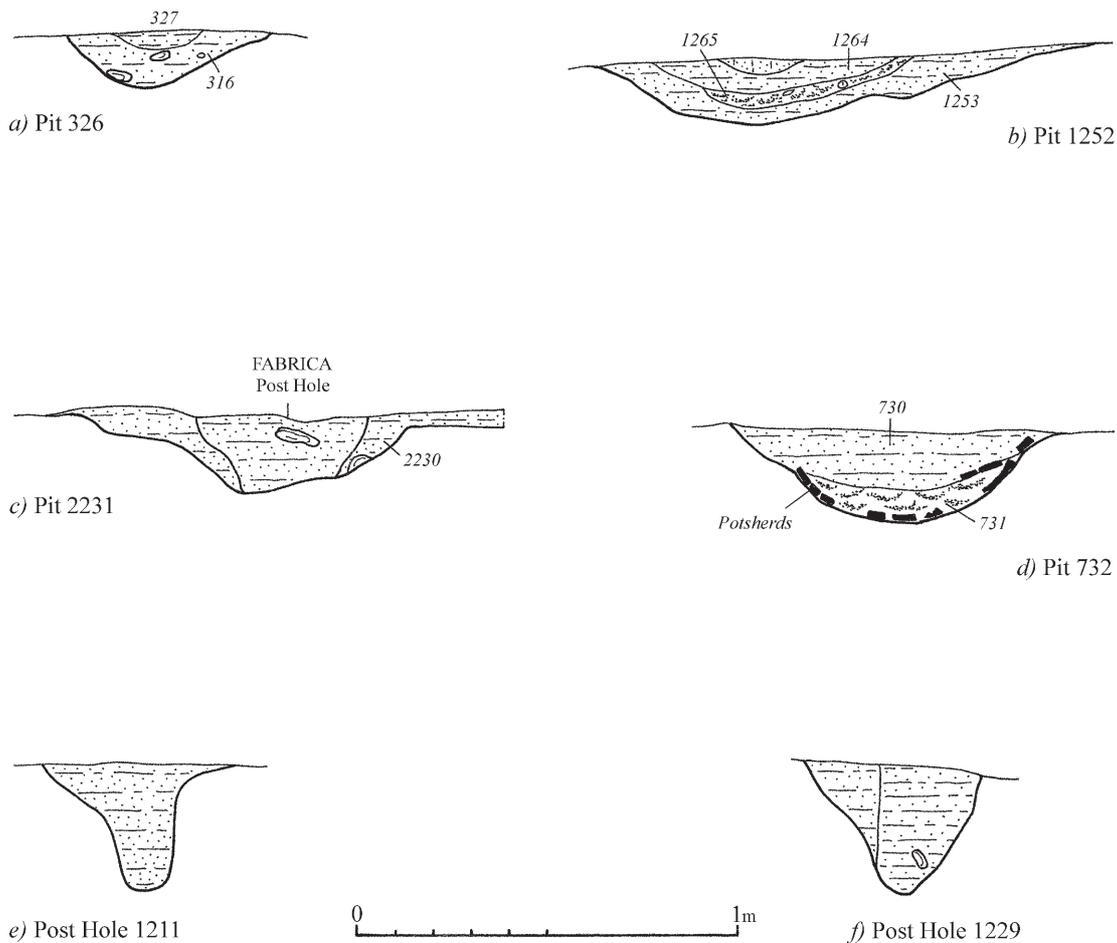


FIG. 3.4 Sections of prehistoric pits and post-holes: Neolithic, a. pit 326; b. pit 1252; c. pit 2231; Neolithic/Bronze Age, d. pit 732; e. post-hole 1211; f. post-hole 1229

surviving to a depth of only 0.23m, though disturbed by one of the post-holes supporting the east wall of the *fabrica* (FIG. 3.4c). Its single homogeneous sandy silt fill contained several sherds of Neolithic pottery. Pit 2232 measured 2.5m by 0.8–1.1m showing a marked tendency towards a dumb-bell shape. In profile it was shallow and fairly flat-bottomed, surviving to a depth of only 0.12m at most. It contained a single cereal grain and some 18 sherds of Neolithic pottery, mostly from a single vessel, all derived from its northern end, which also showed a greater darkening of the fill from the residues of burning. One of the sherds may derive from one of the vessels represented in pit 326 (below 10.12.2). The presence of a sherd of Roman amphora suggests that the pit was partly disturbed during the construction of the *fabrica*.

One further feature may be associated. A shallow natural scoop or possible pit (2239) sealed beneath the *intervallum* road immediately to the north of the four pits described so far was filled with similar dark-stained sandy silt. It measured 1.55m by *c.* 1m with a shallow round-based profile only 0.17m deep, but contained neither finds nor charred plant remains.

LATE NEOLITHIC/EARLY BRONZE AGE

Remains of late Neolithic/early Bronze Age date were recovered at several discrete points across the annexe. At the eastern end of Trench 3 (FIG. 3.5) a circular pit (732) was revealed sealed beneath a buried soil layer (733). It was some 0.85m in diameter, and 0.25m deep with a bowl-shaped profile (FIG. 3.4d). Excavation of the primary fill (731), a black, silty loam containing ash and charcoal, recovered over 135 sherds almost exclusively from a single, large rusticated beaker. This had been broken and the sherds used to line the base of the pit



PLATE 3.1 Neolithic pits cutting old ground surface beneath *intervallum* road, *fabrica* and Barrack 3/4; view north-west



PLATE 3.2 Late Neolithic/Early Bronze Age pit (732) with pottery lining, annexe Trench 3; view north-west

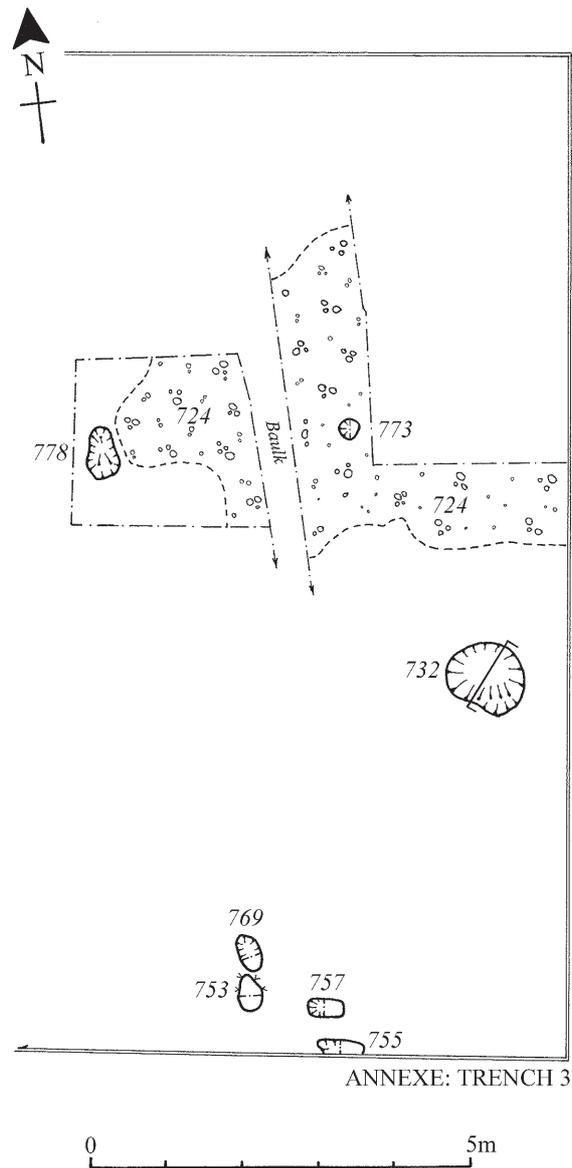


FIG. 3.5 Location plan of late Neolithic/Early Bronze Age features, annexe Trench 3

(PLATE 3.2). The secondary fill (730), a dark brown silty sand, contained a further 37 sherds, representing a minimum of four different pots, predominantly of fine, cord-ornamented beaker. Large quantities of hazelnut shells and small quantities of cereal remains were recovered from both fills, including emmer wheat grains, indeterminate grains of barley and a single find of raspberry.

Immediately to the north of this pit was a metallated surface (724) made up of a single layer of large pebbles, averaging some 0.02–0.04m in diameter, sealed beneath a layer of turfy loam (723) some 0.06m thick. An area some 6m by 4m of the surface was exposed within the limits of excavation, with a single small post-hole (773), 0.25m in diameter and 0.16m deep, towards its centre. When this surface was removed, a larger stone-packed post-hole (778), 0.6m by 0.37m and 0.3m deep, was revealed some 3.25m to the west at the edge of the pebbles. Some 5m to the south-west of pit 732 was a group of four post-holes (753, 755, 757 and 769) near the southern edge of the trench. They were 0.6m apart in two adjacent offset pairs 0.9m apart, but formed no obvious structure. They are assumed to relate to this phase on stratigraphic grounds and because the only associated find was a flint flake from post-hole 753 (below 10.13).

Some 80m to the north-west alongside the road in Trench 9, pit 1419 (below 8.2) contained some Roman pottery, but also most of a shallow, undecorated, probably beaker bowl at the bottom of the lower fill (1426). This would seem to indicate the disturbance by the Romans of an earlier pit. The pit as discovered was 0.9m in diameter and 0.85m deep, with steep sides and a bowl-shaped base (FIG. 8.14c), though to what extent this reflects its original character is difficult to say.

Occupation of the area in this period is further attested by a thin scatter of stray finds in later contexts. From the eastern ditch of the fort, 891, comes a fine barbed-and-tanged arrowhead (AB 899); from post-Roman ploughsoil (AC 207) there is an incomplete barbed-and-tanged piece; and from the topsoil (AD 1) a flake with a bifacially flaked edge.

LATER BRONZE AGE AND IRON AGE

Given the recovery of Iron Age pottery from what was interpreted as a construction trench underlying the buildings within the fort during trial excavations (Maxwell 1983a, 174–7), particular attention was paid to the linear features that were detected beneath the *praetorium* and *principia*. Careful examination made clear, however, that they were of geological rather than archaeological significance. When plotted they made no coherent, regular pattern. They were filled primarily with sand and gravel and, where sectioned, proved to be up to 1m deep, irregular in profile, narrowing rapidly from a width of *c.* 0.5m to 0.05m. Traces of one were also recorded sealed beneath the metalled surface (724) of probable late Neolithic/early Bronze Age date. Such features are, therefore, most likely to have been ice wedges.

Later Bronze Age and Iron Age pottery was recovered from various locations across both fort and annexe (below 10.12), but always in secondary or disturbed contexts. The one possible exception to this generalisation was a shallow linear feature (629), some 3m long and 0.5m wide, which was cut by the medial wall of Barrack 1. It was assumed during the excavation to be a geological feature because of a high concentration of lignite in its fill, though, as already noted, Iron Age pottery was also recorded from another more certainly geological feature.

FEATURES OF UNCERTAIN DATE

There were a number of features cut into the subsoil at various points across the site that are assumed to be prehistoric because they were discovered beneath Roman structures. Where they produced no corroborative artefactual evidence and were not associated with features that did, they have been included below as of uncertain date and associations.

A shallow linear feature only 0.03m deep was identified beneath the floor of the *fabrica*. It was 0.4m wide and ran from a rounded end for 1.5m before petering out. Though adjacent to the area of Neolithic pits, there was no positive evidence to associate it with them. An oval pit (1448) in the cross-hall of the *principia*, measured 2.8m by 1.2m. It had a U-shaped profile with a fairly flat bottom and was 0.33m deep. The fill of silty sand showed signs of animal disturbance and contained some carbonised remains, barley grains and possibly straw, but no other finds.

In annexe Trench 7, an arc of six post-holes was noted forming almost a complete semi-circle up against the northern edge of the trench (FIGS 3.1 and 8.17; PLATE 3.3). If restored as a circular structure, it would have measured some 6.2m in diameter to the centre of the post-holes. Only one (1227) did not exactly fit that restored ground plan. All the post-holes were sectioned (e.g. FIG. 3.4e and f), but no finds were recorded nor were any environmental data recovered.

Finally, two distinct patches of ard marks were recorded cutting through the mid-grey, sandy loam of the buried soil into which the Neolithic pits were cut in the north-east corner of the fort. The main marks were up to 0.06m wide, running in an east–west direction, straight and parallel, some 0.2m apart centre-to-centre separated by a slight ridge, though traces of marks at right angles were also noted (FIG. 3.6; PLATE 3.4). The marks were V-shaped in profile, cut into the subsoil to a depth of between 0.02m and 0.07m and were filled with grey silty sand.

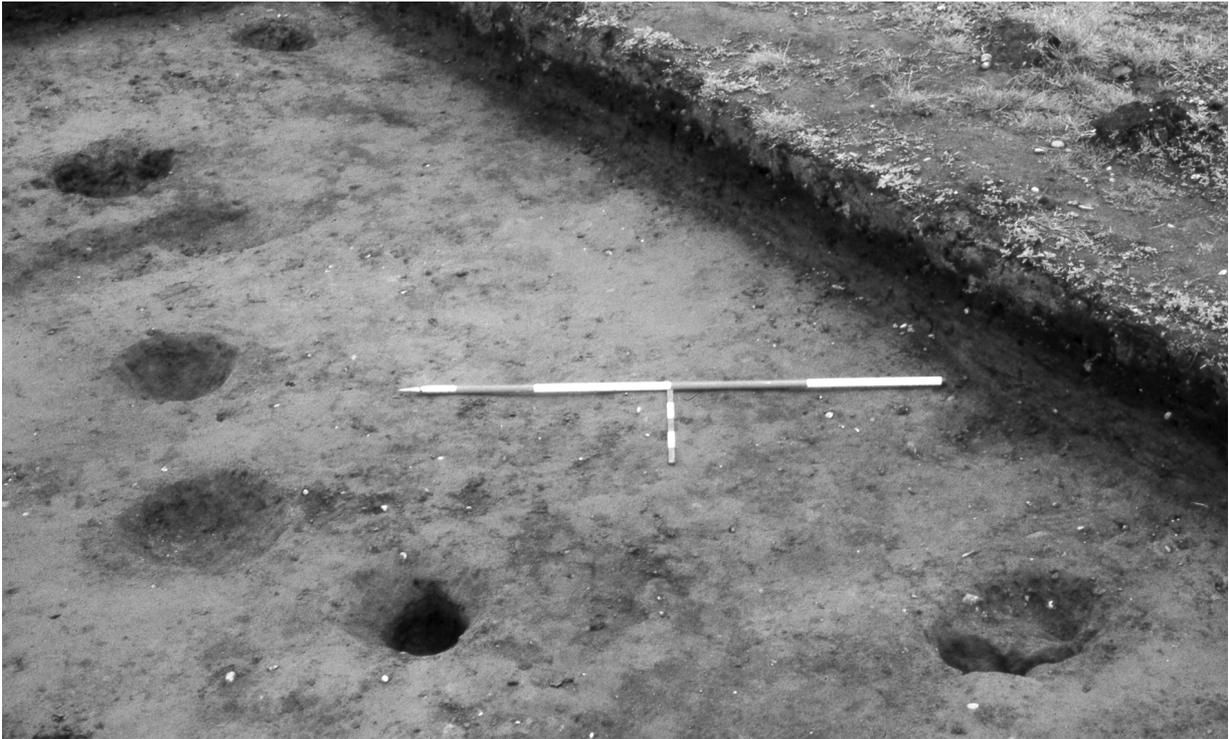


PLATE 3.3 Semi-circle of post-holes of probable prehistoric house, annexe Trench 7; view north-west

3.2 INTERPRETATION AND ANALOGIES

MESOLITHIC

The absence of any clear stratigraphic context for the Mesolithic, flaked lithic assemblage makes its interpretation more difficult, but the size of the assemblage and its concentrated distribution suggest that it was found largely in situ rather than redeposited. This interpretation is further supported by the high proportion of lithic debitage made up of tiny flakes, which in turn indicates that flint and chert working was taking place on site (below 10.13).

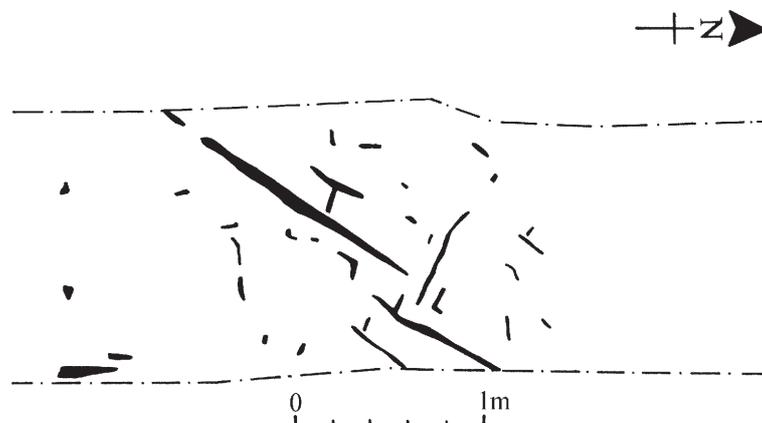


FIG. 3.6 Ard marks cutting the old ground surface; for location see FIG. 3.1



PLATE 3.4 Ard marks in the north-east corner of the fort; view north

EARLY NEOLITHIC

Rather than being found across the whole area of the excavations, the series of earlier Neolithic pits sit in close proximity to one another. Other undated features nearby may be associated, and together they may be interpreted as the remains of settlement. The lack of clearly structural remains may be real, but it is also probable that any traces would have been largely ephemeral (e.g. Atkinson 2002, 142–7). These would readily be destroyed through plough truncation, leaving only the deeper cut negative features. Indeed, the surviving ard marks seem to indicate that process had already taken place before the Roman arrival on the site.

In the absence of contemporary structural remains it is difficult to be certain whether the contents of the pits represent the result of domestic rubbish disposal or of more ritualised deposition, but examination of the nature and composition of the overall assemblage within these pits may help to clarify their function. The contrast between the content of the different pits is striking (TABLE 3.1). The second largest (2232) produced remains of two pots, as did the nearby smaller pit (2231), whereas pit 326 produced the most substantial quantity of ceramics, with a minimum of eight pots being represented. In contrast only small fragments of earlier

TABLE 3.1: EARLIER NEOLITHIC PITS AND THEIR CONTENTS

Pit	Dimensions	Depth	No. of sherds	No. of pots	Flint	Pitchstone	Carbonised remains
326	1.6x0.53m	0.3m	32	8	Y	Y	charcoal, cereal grains and many indeterminate cereal fragments
1252	4.7x0.85–1.4m	0.35m	1	1	Y	Y	charcoal, weed seeds, some cereal
2231	0.85m dia	0.23m	4	2	N	N	not sampled
2232	2.5x1.1m	0.12m	14	2	N	N	single cereal

Neolithic pottery were found in the largest pit (1252), representing another variation in depositional strategies in the Neolithic pits at Elginhaugh.

Sherds of Pot 5 were found only in pit 326. They represented a discrete portion of the body rather than a random selection of sherds from the whole vessel, suggesting the deposition of a single, large portion of an already broken pot. Since the edges between conjoining sherds were relatively fresh and unabraded and the majority of the sherds were found as a single group (316 AK), further breakage is likely to have taken place within the pit. As this was the last group recovered from the pit, it could represent an initial deliberate deposit, with later insertions of material more fragmentary and mixed in origin.

A similar pattern of deposition may have occurred in pit 2232. Most of the various groups of sherds recovered (2214 AA, AB, AF) conjoin to form part of a single pot (9) and the edges of the pieces are all relatively fresh, suggesting that breakage was soon followed by deposition. At least one sherd from another pot was incorporated, probably as the fragments of Pot 9 were gathered together.

Barclay has discussed the difficulty of interpreting the deposition of earlier Neolithic pottery in the case of the Balfarg (Barclay and Russell-White 1993, 166–8). He considers the pits there to represent the remains of ritual activity closely associated with settlement. It seems likely that the deposition of earlier Neolithic pottery within several of the pits at Elginhaugh represents a similar strategy of re-inscribing objects from a domestic context with a new meaning through the structured deposition of refuse. Firstly, the relatively fresh breaks in the conjoining pieces of both Pot 5 and Pot 9 indicate that the remains of the pots were not left to be trampled into contemporary occupation deposits after breakage. Though this might simply reflect a concern for cleanliness in a domestic context, a less prosaic interpretation would be to suggest that the vessels were deliberately broken prior to deposition. Secondly, in both cases we see the apparent selection of discrete parts of pots for deposition, which may represent a particular depositional strategy imbuing the pots with a greater meaning or significance than simply partial refuse collection and disposal. This contrasts with the more mixed and fragmentary remains of other pots, which is more in keeping with general disposal of rubbish or domestic waste, as is the incorporation of carbonised palaeo-environmental remains.

Further support for the interpretation of the Elginhaugh pits as some form of ritualised deposition is provided by the presence of pitchstone in two of the pits, 1252 and 326. In both cases earlier Neolithic pottery was also found, though in the former only in small amounts and in fragmentary condition. There is growing evidence that the presence of earlier Neolithic pottery in association with struck pitchstone within pits represents a particular strategy of patterned deposition, while the general absence of pitchstone from contexts with no earlier Neolithic pottery at Elginhaugh may support the interpretation that even such limited quantities of material were deliberately deposited together. The preference for pitchstone in such deposits may have more to do with its distinct appearance than its working properties (pers. comm. M. Donnelly). Clarke (see 10.13 below) has noted the potential symbolic significance of

pitchstone blades found in earlier Neolithic pits with reference to those at Chapelfield, Cowie (Atkinson 2002, 169–73) and Bannockburn (A. Clarke 1997). A direct association between earlier Neolithic pottery and pitchstone was found within a pit at Carzfield, from which radiocarbon dates of 3956–3663 B.C. and 3960–3382 B.C. (TABLE 10.18) were obtained (Maynard 1993). Geographically closer to Elginhaugh, a similar pattern of deposition has been observed at Ratho, Edinburgh (Smith 1995) and at Melbourne, Lanarkshire (pers. comm. T. Ward). As might be expected, given the likely source of the material, many of the phase 1 pits from Machrie Moor, Arran, contained struck pitchstone (Haggarty 1991).

LATE NEOLITHIC/EARLY BRONZE AGE

It is inevitable that consideration of the function of pit 732 will involve questions of the balance between domestic and ritual activity. Given the relatively limited area of contemporary ground surface that was examined, the absence of associated domestic structures may not be significant (but see below). But the structured nature of the deposition of the pottery recovered from the pit is clear. A choice was made in the insertion of sherds from a range of vessels within the pit, with the selection of finer wares for the upper fill (730) and almost exclusively the remains of a rusticated vessel in the lower fill (731). Most clearly indicative of structured deposition was the arrangement of sherds from the lower fill, which lined the base of the pit. Furthermore, it is clear that these sherds did not represent a portion of a vessel crushed in situ, rather sherds from the same portion of the vessel were randomly arranged as a lining (PLATE 3.2). Such deliberate acts of structured deposition are likely to have been more socially significant than the haphazard disposal of rubbish (Richards and Thomas 1984). That said, however, the presence of ash and charcoal in the lower fill, along with remnants of carbonised food remains, is indicative of a more domestic function, perhaps confirming that ritual actions permeated all facets of social activity. The adjacent pebble surface (724) may be a floor area, though the significance of the apparently co-extensive layer of turfy loam (723) is unclear. Alternatively it may demarcate all that remains of a barrow. The four post-holes (753, 755, 757 and 769) to the south are clearly structural, but provide no coherent plan.

Given that it was disturbed during the Roman occupation, little can be said about pit 1419, though the near complete state of the probably beaker bowl found at the bottom of the lower fill (1426) would again seem to indicate that some form of structured deposition was involved.

LATE BRONZE AGE AND IRON AGE

The general impression is of a lack of structures on the site immediately prior to the construction of the Roman fort. It can be demonstrated, on the basis of the pollen analysis (below 11.1) and surviving turf lines beneath the ramparts and roads at several points (below 7.1, 7.4 and 8.2), that the field was probably under pasture when the Romans arrived. The late Bronze Age and Iron Age pottery is all redeposited and its distribution across the site might reasonably be explained as the result of past manuring. The aerial photographic evidence suggests the presence of settlements potentially of later prehistoric date only a few hundred metres away to the east (FIG. 1.1) and excavation has confirmed the Iron Age date of a pit alignment across the river to the south (Barber 1985), and an unenclosed house and nearby palisaded enclosure some 0.5km to the west (Raisen and Rees 1995).

FEATURES OF UNCERTAIN DATE

The arc of six post-holes in annexe Trench 7 may reasonably be restored as a circular structure, probably a house (PLATE 3.3). Whether the post-holes demarcate the total house area, or whether the outer wall was located outside them, is uncertain. The diameter of the building is at the lower end of the range for timber round houses (Cunliffe 1991b, 286), and it is possible that stakeholes or a slight ring-groove defining an outer wall may not have survived the impact of later ploughing. However, similar simple circular houses of only slightly larger diameter are

recorded at Harehope (Feachem 1960, 189), West Plean (Steer 1956, 232) and West Brandon (Jobey 1962, 22–5), and rather larger houses at Dryburn Bridge (Triscott 1982, 120). In all of these analogous cases the houses appear to be early in the sequence of occupation and are generally thought to fall into the later Bronze Age or early Iron Age period, i.e. in the first half of the first millennium B.C. However, a single post-ring structure from Fox Plantation has been dated to the second half of the second millennium B.C. (MacGregor forthcoming)

Ard marks are regularly discovered beneath Roman sites in northern Britain, often preserved beneath fort ramparts, with examples from at least eleven locations along Hadrian's Wall (listed in Hanson 1996, 356, n. 34) and one, geographically much closer, at Cramond (Goodburn 1978, 418). Such marks are not themselves chronologically distinctive and could date from almost any time in the first three millennia B.C. (Cunliffe 1991b, 377). Though there seems to be a general preference for placing them between the Neolithic and early Bronze Age (Fowler 1983, 151–4), a case may be made for a later prehistoric context (Higham 1991, 96–7). Where they appear to represent only a single episode, as at Elginhaugh, they are usually assumed to relate to the primary clearance of the land (Fowler 1983, 158–9).

3.3 CONSTRUCTION AND RECONSTRUCTION

The only certainly prehistoric structural feature recorded was the arc of six post-holes in annexe Trench 7 (FIGS 3.1 and 8.16), which can reasonably be restored to form a circular structure some 6.2m in diameter. The post-holes were circular or subcircular, averaging *c.* 0.55m in diameter, but surviving to a depth of only 0.17–0.35m. Two (1211 and 1229) contained indications of the dimensions of their posts: the first in the form of the sectioned post-socket, 0.12m across at the base, and the second from a post-impression measuring *c.* 0.25m across at the top of the post-hole, but narrowing gradually to less than half that towards the base (FIG. 3.4d and e). The information is not sufficiently adequate to offer any detailed reconstruction, though the post sizes indicated do not seem sufficient to support a structure of any great height or complexity.

The four post-holes (753, 755, 757 and 769) in Trench 3, tentatively interpreted as of later Neolithic/early Bronze Age date were oval in shape, their surface dimensions consistently *c.* 0.45m by 0.25m. They were generally shallow, ranging in depth from 0.07m to 0.23m, with U or bowl-shaped profiles, though two were quite steep-sided.

3.4 STRATIGRAPHY AND PHASING

MESOLITHIC

The difficulty of determining features within the area of Mesolithic activity makes comment on any stratigraphic relationships impossible, other than to confirm that the remains were sealed by the rampart of the Roman fort and came to light in the first instance when pursuing the location of one of the interval towers.

EARLY NEOLITHIC

The pits cut through the buried soil horizon (1254 and 1255) where it survived, which was in turn sealed by a further buried soil (1257) best preserved beneath the *intervallum* road of the fort. Pits 2231 and 2232 were sealed by the floor of the *fabrica*, and pit 2239 and possible pit 2239 by the *intervallum* road.

LATE NEOLITHIC/EARLY BRONZE AGE

The circular pit (732) was sealed beneath a buried soil layer (733), which was in turn overlain by an occupation layer (489) into which Roman features were cut. The associated pebbled surface (724) and turfy loam layer (723) lay some 0.5m below Dere Street. The former was cut by post-hole 773 and sealed post-hole 778. Like pit 732, post-holes 753, 755, 757 and 769 were sealed by the buried soil layer 733.

LATE BRONZE AGE AND IRON AGE

The ard marks, like the Neolithic pits, cut through the buried soil horizon (1254 and 1255) where it survived, and were in turn sealed by a further buried soil (1257). Though no direct relationship could be established between pits and ard marks, given their juxtaposition they are unlikely to be contemporary. The latter probably represent scoring of the subsoil resulting from the later ploughing of soil layer 1257, possibly in the later Bronze Age or Iron Age.

3.5 ASSOCIATED FINDS

Mesolithic

1041, 1120, 1121, 1123, 1126–1129, 1131, 1133, 1135 and 2110, pre-Roman ploughsoil beneath rampart, west side: 490 flints, 1 sherd of Roman coarse pottery, type 173, 1 sherd of amphora, 2 fragments of burnt animal bone
 1064 and 2111, layer of sand below 1041: 22 flints
 1068, gridded spit: 4 flints
 1069 and 2109, gridded spit: 25 flints
 1070, gridded spit: 2 flints
 1080, 1122, 1130, 1132 and 1134, spit below 1140: 66 flints
 1081, possible post hole fill: 1 flint
 1082, gridded spit: 2 flints
 1083, gridded spit: 2 flints
 1097, undefined cut: 1 flint
 1100, 2036, 2147 and 2112–17, gridded spit beneath 1041: 171 flints
 1140, sand layer below 1041, above 1080: 2 flints
 1144, possible stakehole cut: 1 flint
 2003 fill of ?natural feature, 2004: 2 flints
 2018, gridded spit: 1 flint
 2019, possible pit fill: 1 flint
 2020, gridded spit: 3 flints
 2021, gridded spit: 9 flints
 2022, gridded spit: 33 flints
 2024, gridded spit: 11 flints
 2025, gridded spit: 5 flints
 2026, gridded spit: 5 flints
 2027, gridded spit: 19 flints
 2028, gridded spit: 13 flints, 1 sherd of decorated samian (D10)
 2029, gridded spit: 7 flints
 2030, gridded spit: 4 flints
 2031, gridded spit: 6 flints
 2032, gridded spit: 2 flints
 2034, gridded spit: 1 flint
 2037, gridded spit: 6 flints
 2038, gridded spit: 9 flints
 2049 and 2148–2150, fill of natural hollow: 31 flints
 2050, gridded spit: 15 flints
 2053, gridded spit: 15 flints

2054, gridded spit: 5 flints
 2056, gridded spit: 4 flints
 2057, gridded spit: 4 flints
 2058, gridded spit: 8 flints
 2140, gridded spit: 1 flint
 2142 and 2151, fill of natural hollow: 3 flints

Early Neolithic

Pits

316, primary fill of pit 326: some 60 sherds of Neolithic pottery from at least 5 vessels (some overlapping with 327 below), 5 pieces of flint, including one pitchstone blade, one flake possibly from a polished stone axe, charcoal, a few grains of wheat and barley
 327, secondary fill of pit 326: some 12 sherds of Neolithic pottery from at least 6 vessels (some overlapping with 316 above), charcoal, a few grains of wheat and barley and thousands of indeterminate cereal fragments
 1253, primary fill of pit/hollow 1252: 1 fragment of possible Neolithic pottery, 5 pieces of flint, including one pitchstone blade, charcoal
 1264, third fill of pit/hollow 1252: 1 sherd of Neolithic pottery, 1 piece of flint, charcoal
 1265, second fill of pit/hollow 1252: 1 piece of flint, quantities of charcoal, a few wheat grains, some weed seeds and remains of raspberry and bramble
 2230, fill of pit 2231: 6 sherds of Neolithic pottery
 2214, fill of pit 2232: 18 sherds of Neolithic pottery, mostly from a single vessel, 1 sherd of Roman amphora, a single cereal grain

Associated contexts

1254, 1255, buried soil horizon: 2 sherds of Neolithic pottery, 2 pieces of flint, including one pitchstone blade
 1257, ploughsoil sealing Neolithic pits: 3 pieces of flint, 1 sherd of Roman coarse pottery

Late Neolithic/early Bronze Age

2BC 730, upper fill of pit 732, annexe Trench 3: 37 sherds of beaker pottery, 2 flints, small quantities of cereal remains, both emmer wheat and barley, large quantities of hazelnut shells
 2BC 731, primary fill of pit 732, annexe Trench 3: 136 sherds of beaker pottery, 1 flint, small quantities of cereal remains, both emmer wheat and barley, large quantities of hazelnut shells
 2BC 754, fill of possible post-hole 753, annexe Trench 3: edge-retouched flint blade flake, several fragments of burnt animal bone
 2CD 1420, upper fill of pit 1419, annexe Trench 9: 1 rim sherd of possible beaker pottery, 2 sherds of Roman coarse pottery
 2CD 1426, lower fill of pit 1419, annexe Trench 9: 6 sherds of possible beaker pottery, 1 sherd of other prehistoric pottery, 1 sherd of Roman coarse pottery, 1 sherd of decorated samian (D78)
 2BC 733, buried soil layer, annexe Trench 3: 1 sherd of undecorated samian

Iron Age

1AC 629, fill of linear feature beneath Barrack 1, probably natural, 1 sherd of late Bronze Age/Iron Age pottery

Features of uncertain date

1AC 1449, fill of pit 1448 in the *principia*: 6 indeterminate barley grains and 2 fragments of possible straw

CHAPTER 4

THE FORT – THE CENTRAL RANGE

4.1 *PRINCIPIA* (HEADQUARTERS BUILDING)

4.1.1 DESCRIPTION

The *principia* faced almost exactly due south and measured externally 23.6m by 21m (FIG. 4.1; PLATE 4.1). It was centrally located within the fort and completely surrounded by roads, though these were well preserved only towards the front. It was one of the only two buildings within the fort also to be surrounded by drains. The main entrance to the *principia* was defined by a narrow break in the centre of the construction trench for its south wall. The actual doorway would, however, have been rather wider since the metalling of the *via principalis* continued across the ends of the trenches to merge with the metalling (1430) in the southern ambulatory. By far the most important discovery related to the *principia* was a coin hoard from the south-west corner of the building, not only because of its intrinsic interest and value for dating



PLATE 4.1 General view of the *principia* under excavation; view north

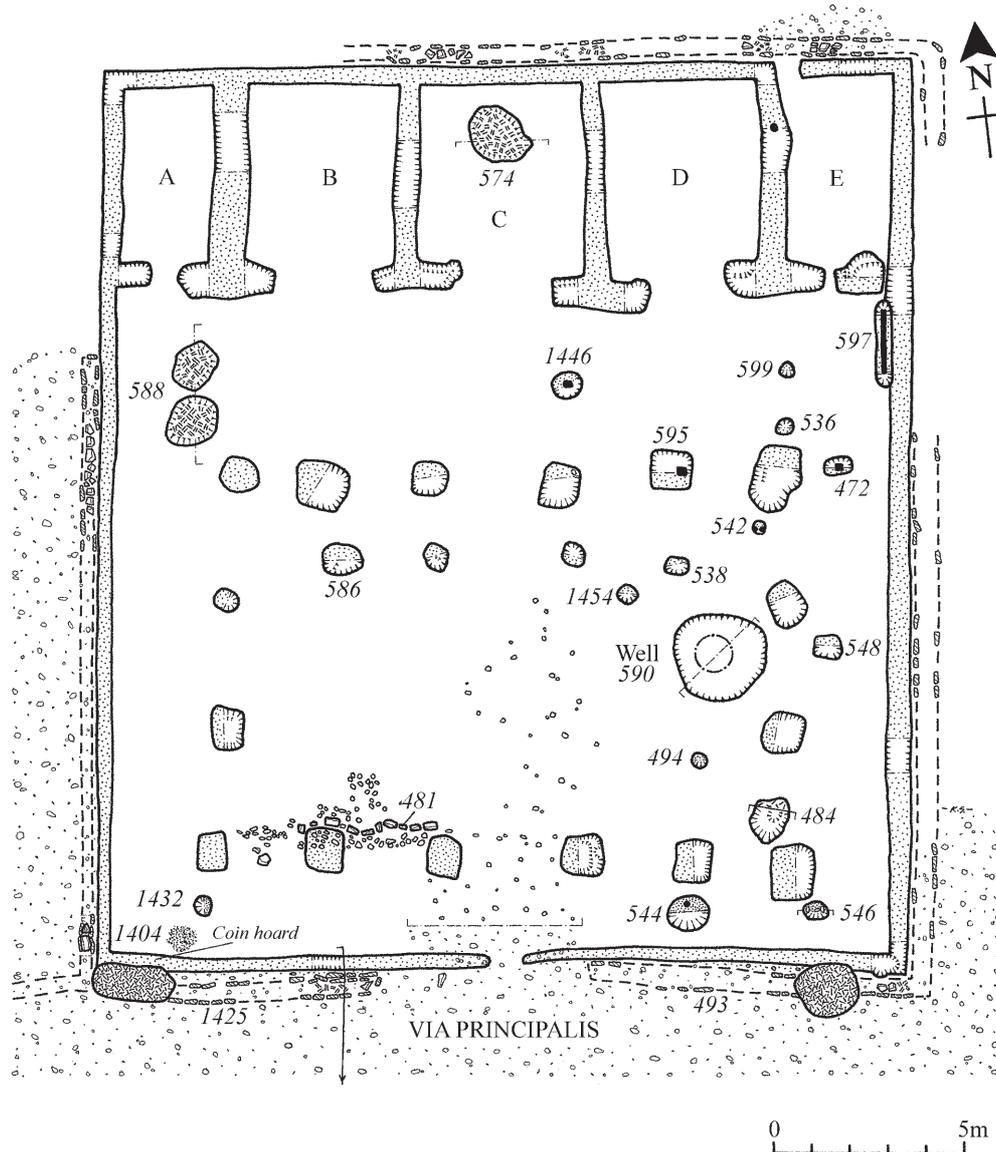


FIG. 4.1 Plan of the *principia*

(below 10.1 and 12.1), but because it is surprisingly rare for hoards to be discovered in controlled archaeological conditions. Approximately 50% of the coins were found still stacked one on top of one another in the construction trench (1422) of the south wall (PLATE 4.2). The location of the hoard and the nature of its contents suggest that it was a foundation deposit (Bateson and Hanson 1990; below 10.1.2), providing further insight into the religious and ceremonial aspect of military life.

The *principia* was best preserved towards the front; the rear had suffered considerably from plough damage as the differential preservation of the surrounding drain indicates (PLATE 1.4; below 7.4 for discussion of drains). But even in the areas of best preservation, post-holes and post-trenches were virtually impossible to discern in the worm-sorted upper soil horizon (below 11.4) and so up to 0.4m was removed by machine. Accordingly, this should be added to the recorded depths of all negative features unless otherwise stated.

For descriptive purposes the building may be conveniently divided into four standard elements which will be dealt with separately below: the courtyard, the ambulatory, the cross-hall and the offices.



PLATE 4.2 Coins from the hoard in situ, stacked one on top of another, in the construction trench of the south wall of the *principia*

Courtyard

The courtyard measured approximately 14.4m by 7.6m internally and had a metalled surface of gravel and pebbles, though only traces of this were recovered. Remains of a stone kerb (481) demarcating the edge of the courtyard from that of the surface of the southern ambulatory was noted in the south-west corner.

The most prominent feature of the courtyard was a well (590) in the north-east corner. It was 1.8m deep, 1.1m in diameter and had been provided with a wooden revetment, though waterlogged remains of its wattle lining (1429) (PLATE 4.3) survived only in the bottom 0.4m. The hazel and alder wattles, of which up to 36 courses survived, were woven in a rough circle around 14 uprights of various species (below 11.3.2). The primary silts, presumed to be contemporary with the use of the fort, were all heavily intermixed because of the constant flow of water through the sandy subsoil, but indicated a disturbed arable habitat (below 11.2).

The construction shaft was some 2.5m in diameter, its sides nearly vertical. It had been packed with quite stony material, particularly towards the top, to provide additional revetting of the unstable sandy soil through which it was dug. Within the fill at the bottom was a broken piece of structural timber (below 10.9.1: 1428 AF), presumably discarded during construction of the fort buildings. Three small post-holes (494, 1454 and 548), the latter impinging on the eastern ambulatory, formed a triangle with the well at its centre and probably supported the legs of a tripod which would have housed some form of lifting mechanism. A similar arrangement is apparent around a water tank in the annexe (below 8.2). In the extreme south-east corner of the courtyard was a shallow, irregularly shaped pit (484) containing substantial amounts of charcoal and fragments of cremated bone of indeterminate species (FIG. 4.5e). This may be the



PLATE 4.3 Woven-wattle lining of the well

remains of some form of ritual deposit linked to the foundation of the fort, as was suggested for a similar pit in the *principia* at Pen Llystyn (Hogg 1968, 129).

Ambulatory

Surrounding the courtyard on all sides was a covered walkway or ambulatory. To the south, east and west this was demarcated by the outer walls of the *principia* on one side and, on the other, by a series of posts set in large, subrectangular post-holes at intervals of between 3m to 3.5m. To the north both sides of the ambulatory were defined by individual post-holes, since it ran along the southern edge of the cross-hall. Here, however, the inner post-holes of the ambulatory (538–86) were smaller, shallower and less regular in both form and spacing. The internal width of the ambulatory on the south, east and west sides was consistently 2.5–3m, while that on the north side varied from 1.6m to 3m, narrowing towards the centre to create a shallow funnel effect. Three additional shallow post-holes (544, 546 and 1432) centrally placed within the southern ambulatory, and possibly one (542) in the northern ambulatory, seem best interpreted as secondary roof supports (see below).

The floor of the ambulatory would have been metalled, though the surface of rammed gravel and pebble was recovered only around the main entrance to the building and adjacent to the kerb (481) at the edge of the courtyard. A small but concentrated deposit of copper-alloy metalworking residues was found towards the western corner of the southern range of the ambulatory (1404). Within a spread of fired and partially fire-reddened clay, intermixed with charcoal, nails and other iron fragments, was a small cylinder-shaped crucible containing copper-based residues (PLATE 4.4; below 10.11).



PLATE 4.4 Hearth (1404) with crucible for copper-alloy working

Cross-hall

The cross-hall, which was approximately 5m wide internally, ran the full width of the *principia* between the northern ambulatory and the offices. Its south wall was supported by posts set within six large subrectangular post-holes (e.g. 595, FIG. 4.5f). These were placed at intervals of 2–3.3m centre to centre, the widest gap being in the centre. The posts for its north wall were founded in a much discontinuous and badly aligned post-trench, which also formed the south wall of the offices.

At the eastern end two small post-holes (536 and 599) continued the line of the eastern ambulatory into the cross-hall, whilst a third (472), continuing the line of its south wall, effectively blocked access from the eastern ambulatory. These post-holes seem best interpreted as supports for the tribunal, the raised platform from which the commanding officer could address assembled troops, which was normally located on this side of the building. Though common features in stone-built forts, tribunals have not previously been recognised in timber so that parallels are lacking. It is possible, however, that the continuation of the *armamentarium* (weapon store) into the area of the cross-hall on the south side of the Flavian *principia* at Strageath (Frere and Wilkes 1989, 36, fig. 17) may mask a similar arrangement. The short slot (597) which ran alongside, though slightly overlapping, the east wall of the building immediately north of the tribunal had contained a beam 0.15m wide and 0.18m deep, and probably supported steps to facilitate access to the platform.

In the centre of the cross-hall at its western end were two adjacent patches of puddled clay (588) each approximately 1m in diameter and 0.2m thick, probably surviving remnants of a

single larger spread. Though similar to the clay which sealed the pit in the *aedes* (574) (see below), there was nothing beneath the patches and their function must remain obscure.

Offices

At the rear of the building was a series of five rooms (A–E) each approximately 5m in length, but varying in width. The three central rooms (B–D) were *c.* 4.5m wide internally, the east and west side rooms (E and A) 3.1m and 2.8m respectively. Each room was entered from the cross-hall. Broad openings some 2–2.5m wide were provided for the three central rooms, but there were only narrow breaks in the construction trenches at the front of the other two. Indeed, in the case of Room E the gap was only 0.3m wide suggesting that, as at the entrance to the *principia*, the door-posts were not set at the ends of the construction trenches. Room E also had a second entrance to the rear, defined by a 0.45m wide gap in the outer wall of the *principia*, presumably to facilitate private access to the building by the commanding officer.

Centrally placed towards the rear of the middle room (C) was a thin spread of clay which sealed a pit (574) 0.85m in depth filled with silty sand containing daub. At the bottom of the pit, which had near vertical sides and a U-shaped profile, was a compacted mass of clay (PLATE 4.5) and, on the south-west side, a possible timber socket was detected. These features probably represent the remains of a timber and clay lining and the pit is best interpreted as having housed the unit's strong-box.



PLATE 4.5 Section through the clay-lined pit (574) in the *aedes*; view north

4.1.2 INTERPRETATION AND ANALOGIES

The identification of the building as the *principia* is clear from both its central position within the fort and its morphology. The tripartite division between the courtyard with its well and surrounding ambulatory, the cross-hall with its tribunal, and the range of five offices with its central *aedes* (shrine) is typical.

The best parallels are provided, not surprisingly, by the broadly contemporary timber *principia* from the forts at Pen Llystyn (Hogg 1968, 128–30, fig. 19), Fendoch (Richmond and McIntyre 1939, 122–7) and Strageath (Frere and Wilkes 1989, 33–7) (FIG. 4.2; TABLE 4.1). Of those three, only Pen Llystyn maintains exactly the same simplicity of plan without subsidiary rooms off the courtyard; on the other hand, the closest in terms of overall dimensions is Strageath. If a standard blue-print for any particular building was going to be apparent

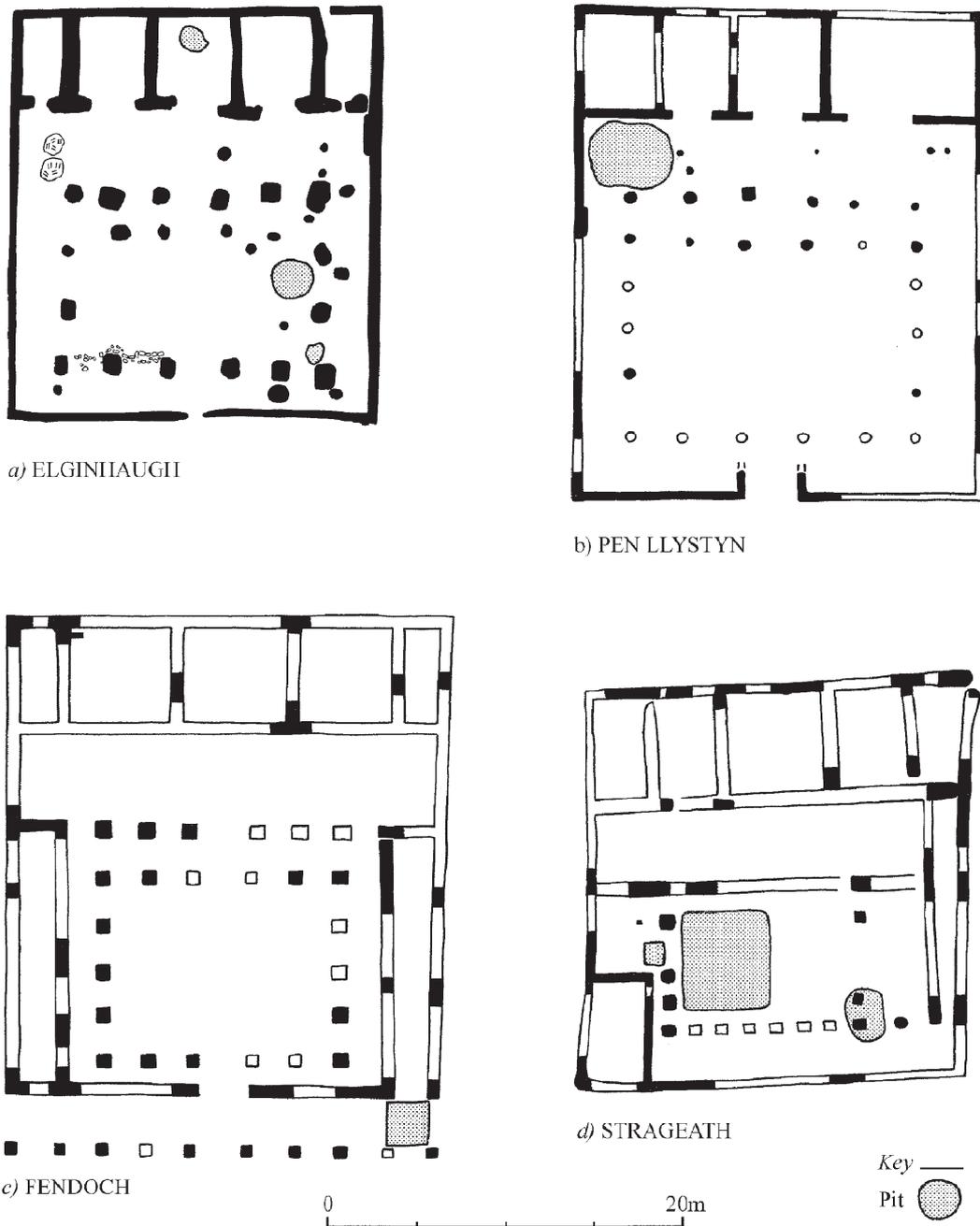


FIG. 4.2 Comparative plans of *principia*: a. Elginhaugh; b. Pen Llystyn; c. Fendoch; d. Strageath

TABLE 4.1: FLAVIAN TIMBER *PRINCIPIA*

Site	Width (m)	Depth (m)	% of fort area	Postulated garrison
Elginhaugh	21	23.6	3.9	c. 330 cavalry or 530 mixed
Fendoch	24.4	30.5	4.5	800 infantry
Pen Llystyn	22.9	28	4.1	960 infantry
Strageath	21.3	22.9	3.3	840 mixed

anywhere, as some have suggested (Richmond and McIntyre 1939, 151), it ought to be evident in the *principia*. Yet despite the recurrent features of their plan and a general consistency in terms of size, no two *principia* are exactly alike. Variations linked to different types of garrison might be one explanation, though there is no obvious correlation with postulated garrisons. Expressing the size of the building as a percentage of the internal area of the fort gives only broadly consistent results.

The only feature of the *principia* that is surprising is the presence of metalworking in the south-west corner of the ambulatory. Similar but more extensive metalworking is recorded at the back of the rampart immediately to the north of the West Gate (below 7.5). The spread of copper-alloy working residues was sealed by demolition debris and so cannot post-date the abandonment of the fort. One possibility, however, is that the passage on this side of the courtyard was used as an armament store within which some minor repairs to equipment were conducted, as has been suggested at a number of sites (Johnson 1983, 108–9). It is notable that within the small number of finds from the upper filling of the well in the courtyard were two spearheads, part of a helmet, a knife and a catapult washer (below 4.1.5), perhaps equipment from store discarded when the building was demolished.

4.1.3 CONSTRUCTION AND RECONSTRUCTION

The use of continuous construction trenches to house the timber uprights for the walls of most internal buildings is a standard feature in Flavian forts. The construction trench for the outer wall varied in width from 0.25m to 0.65m, the larger dimensions tending to occur towards the rear of the building. Its depth, however, was uniformly 0.5m, increasing to 0.8m in the south-west frontage (FIG. 7.24a). The latter undoubtedly reflects better preservation where the remains were protected by their proximity to the mass of the *via principalis*. This is doubly fortunate since it also helped to preserve a coin hoard, originally placed in the construction trench, more than 50% of which had been brought to the surface (483) when the building was demolished (below).

The trenches for the walls which defined the offices were generally larger than others within the *principia*, ranging from 0.45m to 0.9m in width and 0.55m deep. Since the rear of the building, and particularly the north-west corner, was the part most severely truncated by subsequent ploughing, the original depth of the trenches was likely to have been considerably greater. The implications for the reconstruction of the building are discussed below.

Only three primary post-impressions were recorded in the *principia* and only one of these was in a construction trench, in a partition wall between two of the offices (D and E). Thus it is impossible to comment on the spacing between posts, though the normal spacing in construction trenches used in fort buildings is 0.6–0.9m (Hanson 1978, 302–4). The use of separate post-holes tends to reflect a wider spacing, as in the ambulatory where it ranged from 3m to 3.5m. Partly by way of compensation, though presumably also reflecting different height and load-bearing factors, the main post-holes around the courtyard and those defining the south wall of the cross-hall are generally considerably deeper than the construction trench for the outer wall. They measure on average 0.75m and 0.7m in depth respectively. The inner post-holes of the northern ambulatory, however, are much smaller and shallower (0.22–0.35m deep).

All the post-impressions were large: that in post-hole 595 was 0.25m square (FIG. 4.5f); that in post-hole 472, probably a support for the tribunal though also serving to block the northern end of the eastern ambulatory, was some 0.23m in diameter; while that in the partition wall between two offices measured 0.2m in diameter. The apparently non-rectangular posts had probably been disturbed on removal.

Several post-impressions were recorded in secondary post-holes. One (544) in the southern ambulatory contained the impression of a circular post 0.18m in diameter; one (1446) in the middle of the cross-hall the impression of a post *c.* 0.2m by 0.25m; and one (542) in the northern ambulatory containing two impressions each *c.* 0.15m in diameter.

The structural focus of the *principia* is the *aedes*, and a clear line of sight was maintained into it from the main entrance, across the courtyard and through the cross-hall, emphasised by the width of the front entrance and the increased spacing between the post-holes in the ambulatory and cross-hall across this axis. In the *aedes* the standards would have been displayed along with the image of the emperor (Tacitus *Hist.* 3, 13). Indeed, the positioning of the *principia* at the T-junction between the *via principalis* and the *via praetoria* facing the South Gate maintains the same focus for the fort as a whole. Such a focus is likely to have been further reinforced by the superstructure of the building, as has long been surmised (Richmond and McIntyre 1939, 126–7, fig. 7). Thus, the cross-hall is likely to have been raised above the height of the front of the building and provided with a clerestory in order to maintain adequate light levels to facilitate the view through to the rear. Such an interpretation is entirely in accord with the size and depth of the post-holes and the discontinuous wall trench which define the long sides of the cross-hall. However, whether the walls of the *aedes* also reached the same height, as Richmond and McIntyre suggested was the case at Fendoch, is less certain. Indeed, there is nothing in the structural evidence which picks out the *aedes* from the rest of the offices, though the construction trenches do tend to be larger than those towards the front of the building. If the *aedes* walls were raised to the same height as the cross-hall, then the structural evidence would indicate that the other offices were also.

In one respect the structural evidence from Elginhaugh does not fit the widely accepted reconstruction of the roofs of the ambulatory sloping downwards towards the central courtyard. The greater depth of the post-holes defining the inner wall of the ambulatory compared to the outer wall of the *principia* suggests that the roof was pitched the opposite way. This would have a two-fold advantage: it would maximise light levels within the ambulatory and throw rain water out of the building towards the surrounding drains rather than into the central courtyard where there was no provision for carrying it away. This arrangement would not apply to the northern range of the ambulatory since it abutted the cross-hall. Indeed, the difference in load-bearing capacity and, therefore, height is confirmed by its generally smaller and shallower post-holes.

The grooved structural timber found at the bottom of the construction pit for the well may have been a discarded element from the erection of screens at the front of the offices (below 10.9.1: 1428 AF). Its location would seem to indicate that the digging of the well was undertaken late in the sequence of building.

4.1.4 STRATIGRAPHY AND PHASING

As with the rest of the central range there is evidence of only a single structural phase. There are, however, some signs of possible repairs to the building. Three post-holes centrally located within the southern range of the ambulatory (544, 546 and 1432), one on the west and two on the east side of the building, and the similar example at the eastern end of the northern range (542), are much shallower than the bulk of other structural features and inconveniently positioned for ease of passage. That they represent some additional support for the roof provided at a later date seems likely. A similar interpretation for the slightly larger post-hole (1446) in the centre of the cross-hall is probable.

Evidence of the deliberate demolition of the building was slight but clear. A spread of demolition debris (479), comprising burnt daub and charcoal, overlay the construction trench and post-holes in the south-west corner of the building where the junction of two roads had

protected the upper levels from later plough damage. This would seem to indicate that the wattle and daub panels which made up the walls had been collected and burnt, a feature which has been recorded in other abandoned Flavian forts, such as Corbridge, Red House (Hanson *et al.* 1979, 24). Some of the post-impressions seem to have been disturbed and enlarged, while burnt daub and charcoal were also recorded in their filling. In addition, at two points at the front of the building small pits containing daub, which overlay the external drain (493) and part of the outer wall of the *principia*, may represent demolition pits, though they were not excavated.

Specific evidence of careful and deliberate demolition comes from the pit (574) within the *aedes*. Its clay lining had been dumped in the bottom, presumably when the timber supports were removed. The pit had then been filled with sand, which itself contained demolition debris, before being carefully sealed with a layer of clay (PLATE 4.5). That this was some form of symbolic act, the deliberate sealing of what had been part of the religious focus of the fort, seems likely.

The disturbance of the coin hoard provides further indication of the demolition of the building. A number of the coins were found on the contemporary ground surface (483) spread over an area no more than 0.3m square, while one came from the demolition spread (802) which sealed the immediate area and extended over the south-east corner of the *praetorium*. Since approximately half of the coins were in the construction trench (1422) of the outer wall of the *principia*, the others must have been displaced when the timbers were removed. It is, however, slightly surprising, given the treatment of the *aedes* noted above, that this foundation hoard was treated so carelessly.

4.1.5 ASSOCIATED FINDS

As was experienced elsewhere across the fort, many of the finds from the area of the *principia* derive from demolition contexts. A surprising number, however, came from construction trenches and post-holes, though a number of these finds too may well derive from disturbance during demolition. Most of the pottery finds from these contexts were sherds of amphora.

Construction and occupation

- 473, 558, 566 and 575, fills of construction trench of offices: 3 pieces of unidentifiable lead, 2 sherds of amphora, charcoal, nail, daub
- 481, kerb at southern edge of courtyard: 7 sherds of coarse pottery, type 12
- 482, light cobbling in entrance to building: 2 nails
- 485, fill of possible votive pit 484 in courtyard: over 30 fragments of burnt animal bone, charcoal
- 486, 581, 583, 594 and 596, fills of post-holes forming cross-hall: unidentifiable copper alloy, 11 sherds of amphora, 1 sherd of plain samian, daub
- 537, fill of post-hole 536 forming part of tribunal: 5 sherds of amphora, daub
- 547, fill of post-hole 546 in south ambulatory: 1 sherd of amphora, 2 nails
- 560, fill of construction trench 561 of east wall: 1 flint
- 587, fill of post-hole 586 on north side of ambulatory: 1 sherd of amphora
- 598, fill of tribunal slot 597: 3 sherds of amphora, daub
- 1404, copper working area in ambulatory: cylindrical crucible (10.11.2), 4 pieces of copper-alloy waste, 1 piece of unidentifiable copper alloy, 2 iron knives (no. 173), 1 piece of unidentifiable iron
- 1409, fill of post-hole 1408 on west side of ambulatory: 1 sherd of mortarium
- 1423, fill of construction trench 1422 of front wall: 21 *denarii* from hoard (10.1.2), 1 sherd of mortarium
- 1428, fill of construction trench for well 590: discarded grooved structural timber, 2 pieces of brick
- 1429, lining of well 590: wattles and sails (below 11.3.2)
- 1430, metallating at front entrance: 1 melon bead
- 1431, primary fill of well 590: a few charred cereal fragments (wheat and barley), quantities of straw and some bran fragments (mainly wheat and barley)

Demolition

- 479, demolition spread in the south-west corner (see also 802 in *praetorium*): 3 pieces of unidentifiable copper alloy, 2 pieces of copper-alloy waste, square iron plate (no. 184), nails, charcoal
- 483, soil surface in southern ambulatory: 23 *denarii* from hoard (10.1.2), 1 nail
- 489 and 533, demolition fills of *aedes* pit 532: Flavian *dupondius/as* (no. 51), iron ferrule (no. 125), unidentifiable lead fragment, nails
- 499, 591 and 592, uppermost fills of well: 7 sherds of amphora, 1 sherd of mortarium, 4 pieces of brick
- 1427, upper fill in shaft of well 590: copper-alloy ear-guard from a helmet (no. 23), copper-alloy catapult washer (no. 31), large iron knife blade (no. 171), 2 iron spearheads (nos. 121 and 129), woman's leather shoe, 1 sherd of decorated samian (D25), 1 piece of bottle glass, 1 piece of brick, charred cereals, some bran fragments

The absence of daub and charcoal and the relative paucity of finds from the filling of the well is surprising, for it would have provided an obvious dumping ground for any unwanted material, as has been noted elsewhere, notably at Bar Hill (Robertson *et al.* 1975, 12–15). There is a possibility, therefore, that the well remained open after the abandonment of the fort and demolition of its buildings (below 12.1). Analysis of the environmental samples from its fills suggests the presence of dumped animal fodder, which may have been deposited when the secondary use of the enclosure came to an end (below 11.2).

4.2 PRAETORIUM (COMMANDING OFFICER'S HOUSE)

4.2.1 DESCRIPTION

The *praetorium* was the largest building in the fort, measuring 28.5m by 23.8m externally, and took the form of a typical Mediterranean-style house with four ranges of rooms surrounding a central courtyard (FIG. 4.3). It was located at the western end of the central range of buildings, fronting onto the *via principalis* immediately to the west of the *principia*, from which it was separated by a narrow road. It was surrounded on three sides by stone slab-built, covered drains (below 7.4). Only a single main entrance was identified, for the post-trenches that defined the building were otherwise continuous around its perimeter. But there are good reasons for believing that at least one further entrance would have been provided to allow independent access to the rear range of rooms (see below). Such additional entrances were provided to both the rear range and one side range at Oberstimm (Schönberger 1978, 83–4, fig. 41). Likewise, internal doorways were masked by the continuous nature of most of the construction trenches throughout the building.

The *praetorium* was best preserved on the south and west sides where it had been protected by proximity to the surviving remains of the *via principalis* and the *via sagularis*. By contrast the north-eastern third of the building had been fairly heavily eroded by the plough. But even in the better-preserved areas, the structural remains were difficult to distinguish within the worm-sorted horizon. After selective excavation of the south-western half of the building by hand, the surface was lowered by some 0.3–0.4m by machine to facilitate the speedy recovery of its full plan (PLATE 4.6).

For descriptive purposes the *praetorium* may be conveniently divided into four ranges of rooms and a courtyard.

Front range

The front or southern range comprised two large rooms with various subdivisions on either side of the main entrance. The entrance consisted of a passageway 3.5m wide and 5.2m long, divided by three double doorways: one at front and back, and one 1.7m from the back. These were defined by the narrowing of the passage to a width of *c.* 2m by inward extensions of the post-trenches. That these extensions were primary was clear on the west side of the passage,

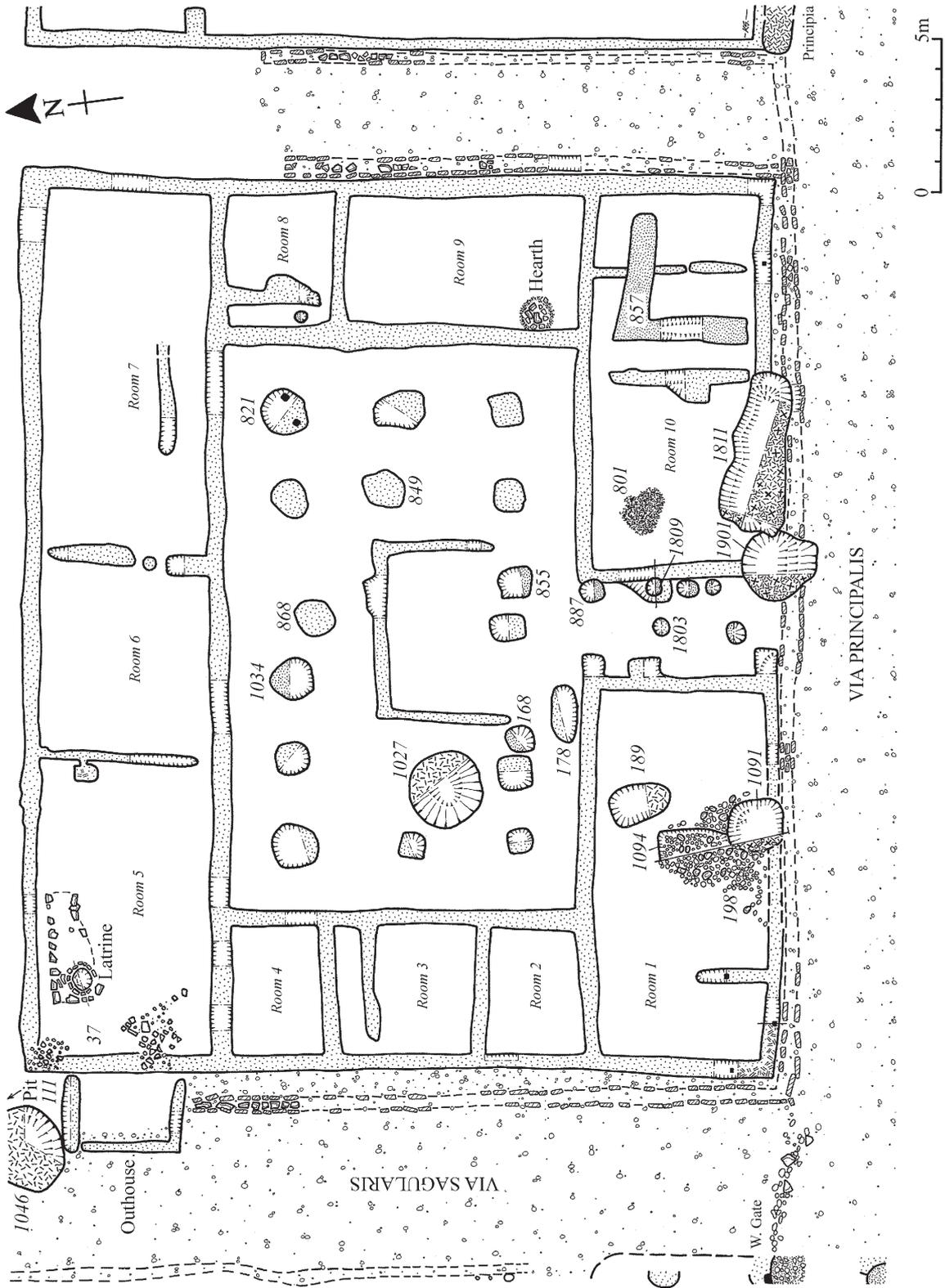


FIG. 4.3 Plan of the praetorium



PLATE 4.6 General view of the eastern part of the *praetorium* under excavation; view north

but less obvious on the east. Here the front example had been removed by a demolition pit (1901), the middle one had been recut and the rear was represented by a separate post-hole (887) which actually cut the end of the passage wall. However, the provision of additional posts within the passageway immediately adjacent to the east wall suggests that some repair had been necessary (below 4.2.4). Two further posts centrally located within the passageway may also represent repairs, though one (1803) would have been ideally placed to serve as the central stop for double doors. Whether access to the rooms on either side was provided directly from the passageway is uncertain, but might serve to account for the multiple doors within the passage. Thus, access to the front rooms could have been obtained without disturbing the more private areas of the courtyard and the rear of the building.

Room 1 to the west of the entrance was a large room 12.2m by 5.8m internally, partially subdivided some 2.8m from the south-west corner by a construction trench projecting slightly less than half-way across the room from the south wall. The only other internal features were two adjacent pits (189 and 1094) located towards the centre of the room. Pit 189 had near vertical sides and a flat bottom, but survived to a depth of only 0.25m. The larger pit (1094) was similarly shaped, but had been better preserved by the overlying cobbling (198) and was 0.5m deep (FIG. 4.5d). Their function is uncertain, but the paucity of associated finds would not easily support their identification as rubbish pits and a storage function seems more probable (below 4.2.2). Their upper fills were largely composed of demolition material, though contained few finds. The lower fills of 1094 (1085 and 1086) contained some carbonised cereals and other plant remains (below 11.2.3).

Room 10 to the east of the entrance was originally almost a mirror image of Room 1, but has a more complicated series of subdivisions of more than one phase. A primary partition slot cut off the eastern end 2.7m from the east wall, though it was not entirely continuous. Some 3.4m to the west in the centre of the room was a parallel, but slightly wider, slot that did not quite extend to the full width of the room. This slot had been additionally widened by later animal disturbance. Within the western half of the room was a possible hearth (801), an irregular

area of burning approximately 1.5m by 1.25m containing charcoal and fragments of burnt sandstone that overlay the remains of a possible pebble floor surface.

Western and eastern ranges

The western range, like the east, was narrower than either the front or rear ranges and comprised three small rooms. Rooms 2 and 4 had no distinguishing features and both measured 4.5m by 3.2m internally, though the former was not quite rectangular. Room 3 was larger, some 4.5m by 4.7m, but an east–west partition reduced the larger dimension by just over 1m. This may have been a walk-in cupboard, but is more likely to have been a passageway giving access from the courtyard to both Rooms 3 and 4.

The eastern range comprised only two rooms. The larger, Room 9, measured 7.8m by 4.7m. A stone-based hearth was located in its south-western corner. It was some 0.9m in diameter made up of burnt sandstone blocks set within a shallow depression. Room 8 measured 4.7m by 3.8m with an internal partition running north–south from the north wall demarcating an area just over 1m wide. As with the similar partition in Room 3, this may have formed a walk-in storage area, but is more likely to have been a passageway to facilitate access from the courtyard into both Room 8 and Room 7. The location of a small central shallow post-hole at the end of the passageway presumably indicates that it was later blocked (below 4.2.4).

Rear range

The rear or north range comprised three large rooms and an attached outhouse or shed. Room 5 measured 9.7m by 5.9m internally. The construction trench for the wall that separated it from Room 6 did not continue across the full width of the room, stopping some 0.5m short of the south wall. On analogy with the partitions in Rooms 3 and 8, this probably indicates direct access between Rooms 5 and 6. Attached to this dividing wall just over 1m from the north wall of the building was a probable post-hole, though it was not excavated. It was rectangular, partly filled with clay, measured 0.85m by 0.5m, and presumably defined some form of internal fitting within the room.

The major internal feature of Room 5, however, was a stone base or low platform formed by a single layer of partly shaped sandstone slabs (PLATE 4.7), almost centrally located along the rear wall. The base had a distinct edge to the north, running parallel with the north wall of the *praetorium*, and at right-angles to that on the west, and may originally have been rectangular. At their maximum the surviving remains measured 3.5m by 1.7m. Set towards the western end of the base was a pit 0.75m in diameter and 0.3m deep defined by up to five courses of small sandstone blocks within which were traces of a grey clay lining. The stone lining seemed to have been left incomplete at one point towards the south-west. A layer of charcoal immediately above the clay lining, derived from the demolition of the fort, suggests that the pit had remained open. It seems best interpreted as a latrine.

An outhouse or shed measuring 2.5m by 3.2m was attached to the west wall of Room 5 immediately to the south of pit 1046. It was located in the gap between the *praetorium* and the *via sagularis*, though its west wall impinged slightly on that road whose surface partly sealed the construction trenches. These were discontinuous and did not join the outer wall trench of the *praetorium*, though the relationship with the road would suggest that the structure is primary. It seems best interpreted as marking a rear service access into Room 5.

Immediately outside Room 5 and the outhouse were three large pits (75, 111 and 1046) clustered close together and effectively blocking the western end of the narrow passage between the *praetorium* and Barrack 2 (FIG. 5.1). Because their use seems likely to relate to the *praetorium* rather than the barrack, they are dealt with here. They were broadly similar in size and character being subcircular and measuring approximately 2m by 2.5m, though varying in depth from 0.8m to over 1.4m (pit 1046 was not quite fully bottomed). All were steep-sided with relatively flat bottoms; their lowest fills consisting of fairly clean sand (e.g. pit 111, FIG. 4.5c). The central pit (111) had been provided with a stone-lined overflow drain, which curved away under the *via sagularis* to the north-west and fed into the main drain running along the



PLATE 4.7 Latrine pit and stone base in Room 5 of the *praetorium*; view north

back of the rampart (below 7.4), clearly indicating that it had been designed to contain liquid waste. The pits were not all dug contemporaneously, for pit 111 just clipped the top of pit 1046, which presumably, therefore, had already been backfilled. The other two appear to have remained open, though presumably covered, until the end of the life of the fort, for they contained a higher proportion and wider range of artefactual material in their upper fills, including evidence of the working of copper alloy (below 7.5), which presumably represents debris derived from the demolition of the fort.

Room 6 measured 6.3m by 5.9m and contained no internal features. The construction trench for the wall that separated it from Room 7 was discontinuous, though the structural remains were severely truncated in this area. A 1m wide gap may mark an internal doorway, but if so it was later blocked by a single post. Room 7 was the largest of the rear range, measuring 11.8m by 5.7m, and contained the partial remains of a partition wall running parallel to and 1.3m from the north wall of the courtyard. The partition may originally have continued further, particularly to the east, but its construction trench had been so severely truncated that only a length of 3.6m was detected. Such a partition probably served to define an internal corridor to facilitate access between Rooms 6 and 8, and perhaps a rear entrance, without entering Room 7.

Courtyard

The central courtyard was 18.3m by 11.5m, its outer wall formed by the inner walls of the four ranges of rooms that surround it. Around its perimeter was a colonnade or walkway *c.* 2m wide, demarcated by a series of individual posts set in substantial post-pits. The duplication of posts suggests that the colonnade had been remodelled or repaired (below 4.2.4), but the original layout is difficult to distinguish. Assuming basic symmetry, the four corner posts and the central posts in each side are likely to be original, even though post-pit 868 is slightly off line. Two intermediate posts in the longer sides would be necessary to reduce the spacing between posts to 3–4m. Such posts are readily identifiable except in the south-west corner. Here the

larger of the pair of pits, which was also slightly deeper, is more likely to have been primary. This leaves post-pits 168, 855 and 1034 as probable later additions, the first two of which were notably shallower than other post-pits of the colonnade. At the eastern end the width of the colonnade had been doubled by the insertion of a further post (849), but this was not paralleled on the western side.

In the centre of the courtyard was a three-sided rectangular enclosure, 5.4m by 3.8m, defined by very slight construction trenches no more than 0.25m deep. Its central location, with its open side facing the main entrance, suggests some form of ornamental feature, such as a low hedge or trellis, perhaps defining a small garden.

In the south-western corner of the courtyard was a large pit (1027), some 2m in diameter and 1.2m deep, which penetrated just below the water table. It was in an ideal position to have served as a water tank, and certainly the lowest fill of silty sand suggested that it had remained open for some time, but there was no sign of any lining. It was subsequently filled, probably in the course of demolition, with layers of sandy clay and sand containing quantities of pottery and burnt daub. A shallow, oval pit (178), 1.9m by 0.8m by 0.46m deep, ought to be secondary since it blocks the colonnade immediately to the west of the entrance, but it did not appear to contain burnt daub which tends to be indicative of demolition fills.

4.2.2 INTERPRETATION AND ANALOGIES

Identification of this building as the *praetorium* is clear from its position within the fort adjacent to the *principia*; its associated features, particularly the more elaborate latrine pit; its large size; and finally its morphology. The internal courtyard or peristyle arrangement is basically a Mediterranean design for the town house of a relatively wealthy family. As such it is entirely appropriate for the commanding officer of an auxiliary unit, a man of some social standing who would probably have been accompanied by his family and servants (cf. Bowman and Thomas 1987, 129–30, 137–40). Confirmation of their presence is limited to single finds of shoes for a woman and a child from waterlogged deposits in the well in the *principia* and the inner east ditch (below 10.8).

Because it was primarily a private residence, it is likely that internal arrangements of the *praetorium* would have been less standardised, thus making it more difficult to identify the function of individual elements by analogy. Indeed, close parallels for the building as a whole are difficult to find. Perhaps closest are two of the Tribune's houses (nos 1 and 4) in the legionary fortress at Inchtuthil (Pitts and St Joseph 1985, 128, 135), though these were both provided with an additional corridor on one side with a range of rooms beyond it (FIG. 4.4). Similarly, the *praetorium* at Pen Llystyn has an additional yard on one side and subsidiary corridors on two sides of the courtyard (Hogg 1968, 130–2, fig. 19).

Nonetheless, various general points may be made. The focus of the building is the central courtyard, probably a garden area within the colonnade, which would have provided privacy and seclusion for the commanding officer and his family as well as ensuring maximum light provision for the surrounding rooms. Thus the rear portion of the building is likely to have contained the private apartments, while the more public rooms would have been at the front. Certainly the design of the entrance, with its multiple doors, argues for restricted access beyond Rooms 1 and 10.

The stone base and pit in Room 5 in the rear range presumably served as a private latrine, either forming a shallow earth-closet or possibly intended to contain a bucket. The stone platform would have ensured that the area remained accessible underfoot in case there was seepage. The adjacent outhouse is likely to have been linked to the servicing of the latrine, for the three large pits (75, 111 and 1046) immediately outside seem best interpreted as cess pits, particularly given their clean lower fills and the provision of a stone-lined overflow drain leading out of pit 111. Environmental samples taken from the lower fills were, unfortunately, unproductive. The central position of Room 6 in the rear range makes it a good candidate for the dining room, conveniently adjacent to the latrine, while the smaller side rooms (2–4 and 8), particularly those with less direct entry by passageway, are likely to have been bedrooms or

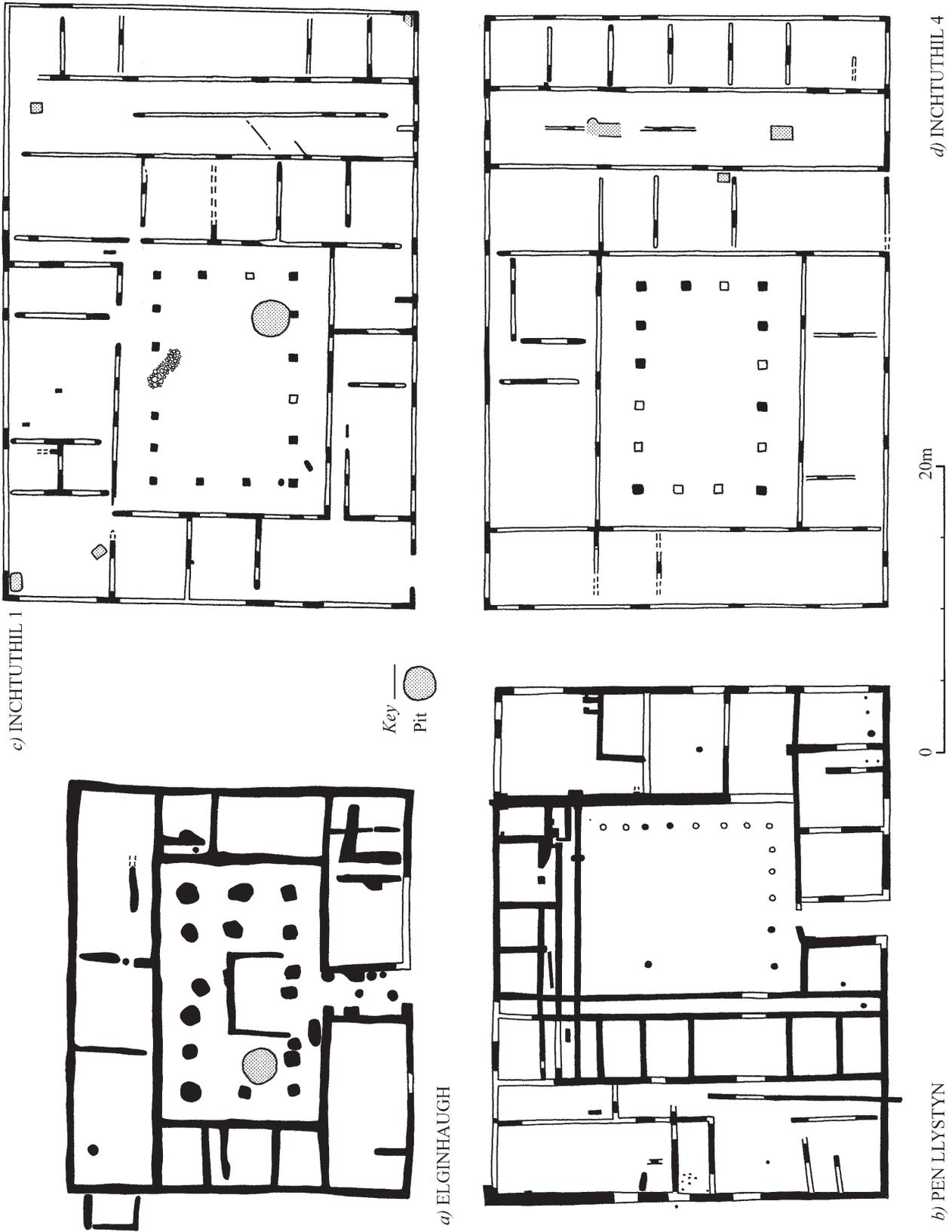


FIG. 4.4 Comparative plans of officer's houses: a. Elginhaugh; b. Pen Llystyn; c. and d. Inchtuthil

guest rooms. Room 9 contained the only securely identified hearth, but this looks more likely to have been used for heating than cooking.

The provision of possible storage pits (189 and 1094), whose lower fills (1085 and 1086) contained a few carbonised cereal grains and much charcoal, perhaps points to the identification of Room 1 as the kitchen, though the absence of an oven might be taken to undermine this suggestion. Standard cooking ovens are attested nearby, however, on the other side of the *via sagularis*. The subdivisions within Room 10 and its location at the front of the building may indicate that it served as offices or accommodation for servants.

4.2.3 CONSTRUCTION AND RECONSTRUCTION

The construction trenches for the external load-bearing walls of the *praetorium* were continuous and maintained fairly consistent surface dimensions, averaging 0.5m in width. However, they showed rather greater variation in depth (0.3–0.9m) with the larger dimensions recorded at the front of the building adjacent to the road, reflecting the differential survival of contemporary levels already referred to. Three post-impressions were noted in this area, where they had been set into the bottom of the construction trench of the outer wall, though one was recorded only in section (FIG. 4.5a). They measured 0.12m square and 0.14m by 0.1m, and were 0.1m in diameter. Further structural details were recovered from the south-west corner of the building. The original width of the wall seems to have been preserved as a band of clay at least 0.25m wide surviving in the upper fill on the outside of the trench (FIG. 4.5a), subsequently sealed by the demolition spread which had covered the area. There were also indications of repair to, or partial replacement of, the wall (below 4.2.4).

Where examined, the construction trenches for the divisions between rooms within a range and other internal partitions tended to be narrower and shallower than those of the outer walls, none exceeding 0.35m in depth and most considerably less (e.g. 879, FIG. 4.5b). This is as might be expected, however, since they are less likely to have been load-bearing. A single post-impression 0.1m in diameter was recorded in section in one internal partition in Room 1, where it penetrated below the bottom of the construction trench.

Two post-impressions were also recorded in one of the post-holes in the courtyard (821), presumably indicating a phase of repair or replacement after the initial construction (below 4.2.4). Notably this was one of the few construction contexts that produced any finds. Both post-holes were large, one 0.37m square, the other 0.24m in diameter. It was difficult to determine which of the two was secondary, for both were only visible at the bottom of the post-pit, but the larger of the two was the more ephemeral. The depth of the post-holes was of the same order of magnitude (0.4–0.65m) as the main construction trenches with three exceptions which were at least 0.15m shallower, two of which (168 and 855) were probably secondary posts.

There is no evidence that any part of the building was other than one storey in height. Each individual range of rooms would have been easily provided with a simple pitched roof, none having a span exceeding 6m. The colonnade, which served as an open, but covered, access between rooms, as well as a walkway around the garden, is likely to have been provided with a lean-to roof continuing the roof-line of the range against which it was set. The one possible exception is the eastern range, where the double line of posts within the courtyard may indicate a separately covered area, possibly an adaptation to the British climate.

4.2.4 STRATIGRAPHY AND PHASING

As elsewhere in the central range there is evidence for only a single structural phase in the *praetorium*. There are, however, clear signs of repairs or minor alterations, for it is sometimes difficult to distinguish between them. There is no doubt that Room 10 had been modified. A 0.8m wide, but shallow (0.26m), L-shaped construction trench (857) separated off the south-east corner of the room, cutting through an earlier partition. It defined a room approximately 4.4m by 3.6m with a short access passage to the north. Whether the blocking of

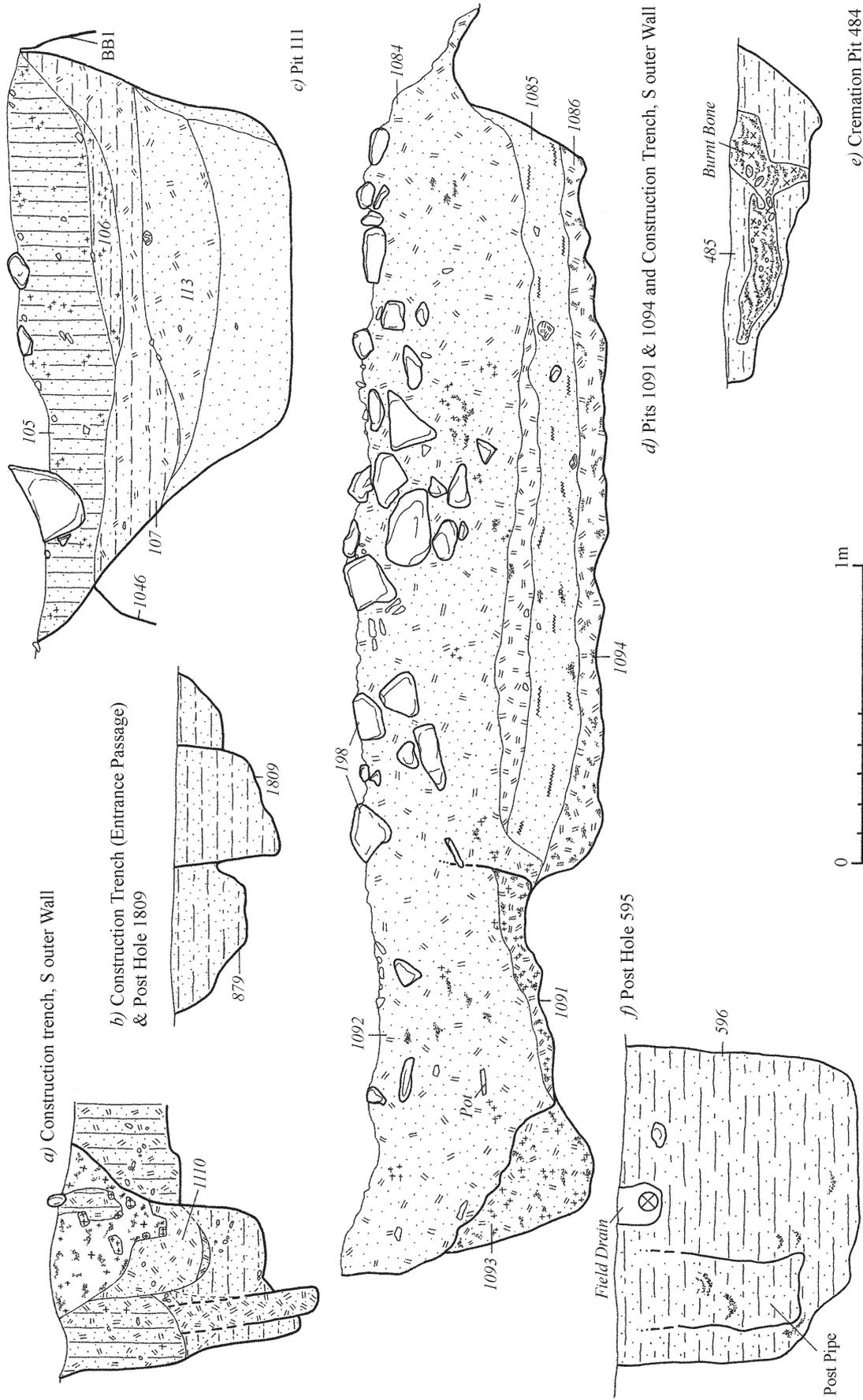


FIG. 4.5 Sections of structural features and pits in the *praetorium* (a-f): a. construction trench, south wall; b. construction trench, entrance passage, and post-hole 1809; c. pit 111; d. pits 1091, 1094 and construction trench, south wall; e. pit 484; f. post-hole 595

the passageway in Room 8 by a single post-hole was a deliberate modification, or was necessitated by structural considerations, is uncertain, but it would have made access almost impossible. Similarly, much of the remodelling of the courtyard may have been for aesthetic rather than structural reasons. It was argued above (4.2.1), on grounds of asymmetry, that post-holes 1034, 855 and 168 were secondary. Certainly the latter two were too close to the next post-hole to the west to be contemporary with them. Since they were also shallower, they seem likely to be replacements. The placing of two posts in a single post-hole (821) is also unlikely to have been a contemporary provision.

Similarly, the east wall of the entrance passageway underwent repair, for the support for the middle door had been recut (FIG. 4.5b) and two additional post-holes had been dug within the passage immediately adjacent to the wall. Though the smaller of these post-holes was only very shallow, the larger was 0.45m deep and packed with stones. The rear post-hole on this side of the passageway (887) may also be secondary, for it cuts the construction trench at the corner of Room 10. However, again for reasons of symmetry, it is likely to have replaced a primary post in the same position (above 4.2.1).

There were slight hints that the front wall in the south-west corner may also have undergone repair or partial replacement. A section (FIG. 4.5a) showed that the construction trench may have been re-dug along the inside of the original wall line. This delving (1110) did not penetrate to the bottom of the original trench or appear to expand its width. It might simply have been explained as resulting from differential backfilling, but for the subsequent focus of the demolition disturbance above it rather than above the original wall line.

Evidence of the demolition of the *praetorium* is clear. Large quantities of demolition material, including charcoal and burnt daub, were spread over the south east and south-west corners of the building across Rooms 1, 2 and 10 (contexts 152 and 802). Some burning had taken place in situ; for it had discoloured the subsoil within Rooms 1 and 2 suggesting that here, as in the *principia*, wattle and daub panels had been collected together and burnt. The section through the front wall (FIG. 4.5a) showed that the upper filling had been dug into as if to remove walling, the disturbance subsequently filled with burnt daub and charcoal.

All of the pits associated with the building (189, 1027 and 1094), including those outside the north-west corner (75, 111 and 1046), contained demolition debris in their upper fills to a greater or lesser extent (e.g. FIG. 4.5c). In addition three demolition pits (1091, 1811 and 1901) had been dug through the front wall of the building, paralleling the situation at the front of the *principia*. The filling of each contained large quantities of burnt daub and charcoal. Pit 1091 also cut the edge of pit 1094. This was presumably open at the time for its upper demolition fill is indistinguishable from that within the later pit (FIG. 4.5d).

After the demolition phase at least part of the area was cobbled over, though traces of this process were slight. Both demolition pit 1091 and the earlier storage pit 1094 were sealed by an area of heavy, rough cobbling (198) (FIG. 4.5d). The cobbling spread out from the north side of the drain along the edge of the *via principalis*, where it was some 5m wide, petering out towards the centre of what had been Room 1 (PLATE 4.8). It was thickest, up to three layers, where it sealed the pits. The cobbling may originally have been more extensive across the area of the demolished *praetorium*, for similar cobbles formed the uppermost filling of two of the cess pits between the *praetorium* and Barrack 2 (75 and 111) (FIGS 4.5c and 5.1) and patches of lighter cobbles and sandstone slabs were recorded, admixed with demolition material, across the western half of Room 5 in the early stages of the excavation (37). The cobbling was deeper and more substantial where it had subsided into the pits in Room 1 and also been protected from subsequent plough damage by its proximity to the solid mass of the *via principalis*. Similar cobbling is also seen overlying the north end of Barrack 12 (below 6.4) on the south side of the road. Remains of such secondary cobbling and other traces of post-demolition use of the site were widely scattered around the fort (below 12.1).



PLATE 4.8 Cobbling sealing pits 1091 and 1094 in the *praetorium*; view north

4.2.5 ASSOCIATED FINDS

Structural features

- 179, fill of pit or secondary post-hole 178 in colonnade: 8 sherds of coarse pottery, 4 sherds of amphora, 1 piece bottle glass, nails, charcoal
 820, fill of colonnade post-hole 819: 1 sherd of coarse pottery
 822, fill of colonnade post-hole 821: nail, charcoal
 856, fill of secondary colonnade post-hole 855: 1 sherd of coarse pottery, nail, 3 flints
 806 and 866, fills of construction trench of outer wall: 2 sherds of amphora, 1 flint
 1015, fill of colonnade post-hole 1014: unidentifiable copper alloy
 1017, 1045 and 1053, fills of construction trenches for internal walls: fired clay ball (no. 235), flint, daub

Contemporary pits

- 76 second fill of pit 75: crucible fragments with copper-based residue, rectangular copper-alloy strip (no. 78), 3 pieces of copper alloy waste, 3 sherds of coarse pottery, nails, 1 piece of burnt animal bone, daub
 101, fill of latrine: sherd of 'carrot amphora'
 107 and 113 lower fills of pit 111: 1 sherd of coarse pottery, 1 sherd of plain samian, 1 piece daub
 161, 1141, upper fills of pit 1046: fragment of lava quernstone, over 40 sherds of coarse pottery, 5 sherds of mortarium, 1 sherd of plain samian
 192, 193 and 194, lower fills of pit 189: 3 sherds of mortarium, 2 sherds of amphora, 1 melon bead, 4 fragments of burnt animal bone
 1030, lower fill of pit 1027: 2 sherds of pottery

1085 and 1086, lower fills of pit 1094: 1 sherd of mortarium, 1 nail, 1 piece of unidentified iron, charred cereal remains and a sloe stone, 1 flint, comminuted charcoal

Demolition and post-fort features

- 36, upper demolition fill of pit 75 between *praetorium* and Barrack 2: copper-alloy junction loop from harness (no. 21), copper alloy waste, double-spiked iron loop (no. 153), some 20 sherds of coarse pottery including types 22, 115, 142 and 181, 1 sherd of mortarium, 3 sherds of amphora, nails, lava quernstone no. 15, brick, 1 fragment of burnt animal bone, charcoal, daub
- 37, secondary cobbling in north-west corner: 1 sherd of coarse pottery, 1 sherd of mortarium, quantities of burnt daub
- 105 and 106, upper demolition fills of pit 111: 2 pieces of unidentifiable copper alloy, 4 pieces of copper-alloy waste, small iron buckle (no. 165), lava quern fragment, nails, 7 sherds of coarse pottery including type 23, over 20 sherds of amphora, 2 sherds of plain samian, including 1 stamp (S6), 1 flint, cinder, charcoal, daub
- 152, demolition spread in south-west corner: three small dome-headed copper-alloy rivets (no. 47), copper-alloy rod (no. 93), unidentifiable copper-alloy, charcoal, daub, a small number of carbonised cereals grains
- 191, upper demolition fill of pit 189: 1 piece of flint
- 198, cobbles sealing pits 1091 and 1094: fragment of lava quernstone
- 802 and 842, demolition spreads on east side: Republican *denarius* from the hoard (no. 25), possible *as* of Vespasian (no. 32), *as* of Domitian (no. 39), fragment of copper-alloy waste, 2 glass counters, some 30 sherds of coarse pottery, including types 202 and 211, 11 sherds of amphora, 1 sherd of prehistoric pottery, nails.
- 867, fill of demolition pit 1901: coarse pottery type 102, 2 sherds of amphora
- 1026, 1031 upper demolition fills of pit 1027: 1 piece of unidentifiable copper alloy, 1 piece of copper-alloy waste, over 60 sherds of coarse pottery, including type 86, 11 sherds of amphora, 1 nail, daub
- 1066 and 1084, upper demolition fills of pit 1094: 3 sherds of coarse pottery, 5 sherds of amphora, 1 piece of glass, fragment of upper stone of native disc-shaped quern (no. 6), nails, 1 piece of ceramic building material, daub
- 1092, fill of demolition pit 1091: lead cylinder (no. 223), 1 sherd of coarse pottery, charcoal, daub
- 1093, demolition fill of construction trench for outer wall: 1 sherd of amphora, charcoal, daub
- 1812, upper fill of demolition pit 1811: rounded leaf-shaped silver pendant (no. 1), 1 sherd of amphora, 1 piece of burnt animal bone

4.3 GRANARIES (*HORREA*)

4.3.1 DESCRIPTION

The two granaries were located side by side running east–west in the central range to the east of the *principia* just inside the East Gate (FIG. 4.6; PLATE 4.9). As in many other parts of the fort, a heavily worm-sorted soil horizon immediately beneath the modern topsoil masked negative features that had been cut through it. Only after this had been removed by machine did the post-holes and construction trenches of the granary become apparent. Thus at least 0.3m must be added to the depth of all features unless otherwise stated.

Excluding the loading bays, each granary was 24.2m long externally made up of 17 parallel transverse construction trenches approximately 1.5m apart and varying in length from 9.5m to 12m. Located between each transverse trench along both sides was a row of posts set in individual post-holes. Because of the structural peculiarities of granaries, their width is difficult to calculate, but the best estimate suggests a figure of *c.* 9.5m, equivalent to the minimum trench length (below 4.3.3). That would leave a gap of approximately 3m between the two buildings.

At each end was a covered loading bay 3–3.5m deep supported on two posts *c.* 6–6.5m apart. These would have facilitated access from either the *via sagularis* or the 4m wide road adjacent to the *principia*. The north side of the eastern loading bay of Granary 2 (FIG. 4.6, G2) was

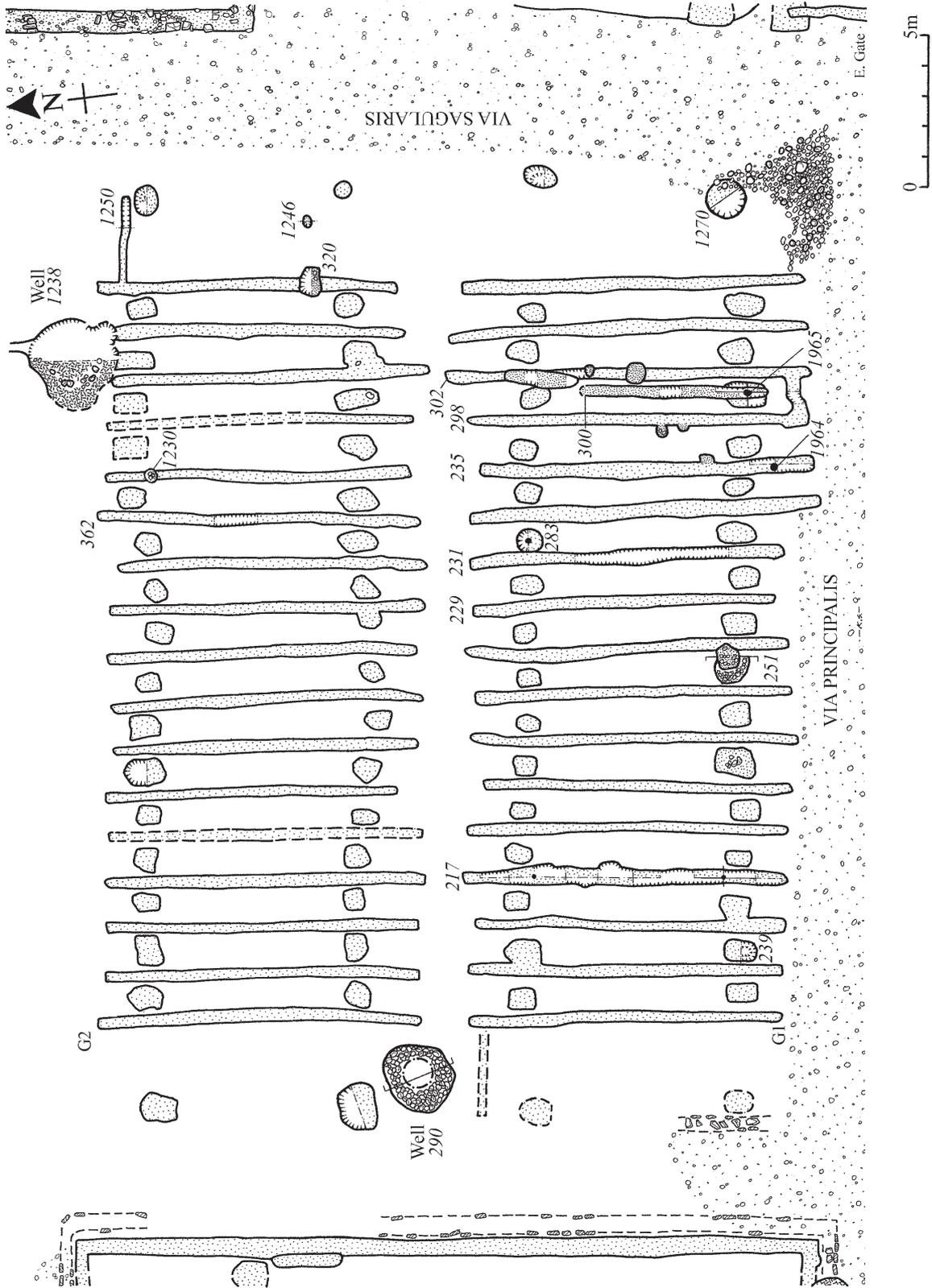


FIG. 4.6 Plan of the granaries



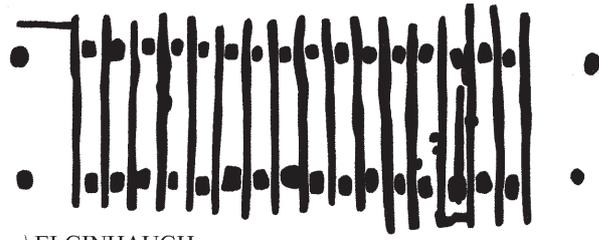
PLATE 4.9 Granary 1; view north

further defined by a narrow construction trench (1250). It is uncertain whether this was a recurrent feature, for similar trenches were not confidently attested elsewhere. However, possible traces were noted at the north side of the western loading bay of Granary 1 (FIG. 4.6, G1), where the post-holes were also difficult to discern. The only other feature identified within any of the loading bays was a small, shallow post-hole (1246), again at the eastern end of Granary 2.

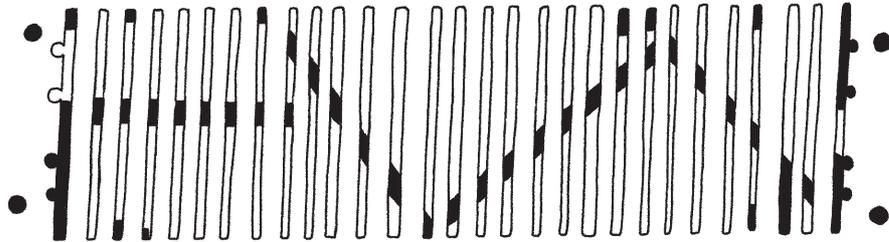
4.3.2 INTERPRETATION AND ANALOGIES

Of all the buildings within Roman forts granaries are the most readily identifiable by virtue of their distinctive structural form (FIG. 4.7; Manning 1975b). Their identification as storage buildings, particularly though not exclusively for grain, is widely accepted and confirmed at Elginhaugh by the presence of charred cereal remains in structural contexts (below 4.3.5 and 11.2.3). The two examples are typical of the most common type of military timber granary in which a series of parallel post-trenches runs across the short axis of the building, though the provision of additional post-holes between these trenches is only rarely attested (below 4.3.3). In auxiliary forts granaries are normally located within the central range between the *principia* and one of the gates, as is the case at Elginhaugh.

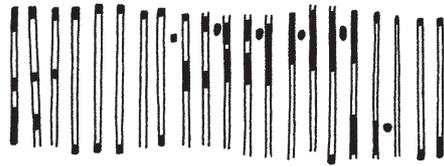
A number of excavated examples have a covered loading bay at one end, usually supported on two posts, though only at Pen Llystyn and Inchtuthil are bays attested at both ends (Hogg 1968, 132, fig. 19; Pitts and St Joseph 1985, 116–19). The construction trench on one side of one loading bay is paralleled at Castleshaw, though no post-holes to support the roof of the postulated loading bay were detected there (Thompson 1967, 8, fig. 4). Presumably this feature gave added protection against the elements. Since it is particularly important to keep grain dry, the apparent absence of covered loading bays at many sites is problematic, but may simply reflect the limited scale on which most of them have been examined. Similarly, access from both ends of the granary may be more common than is attested, for it would make the



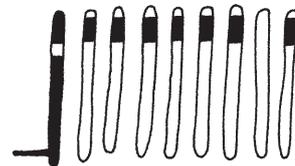
a) ELGINHAUGH



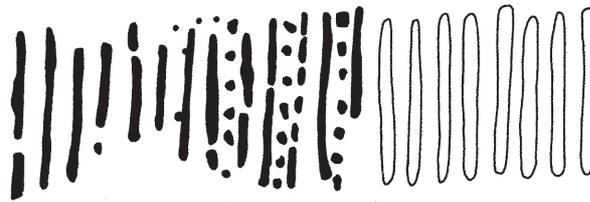
b) INCHTUTHIL 2



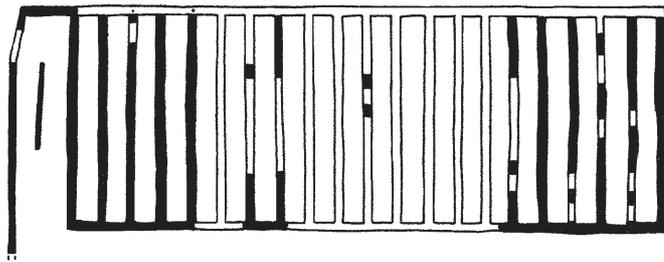
c) PEN LLYSTYN



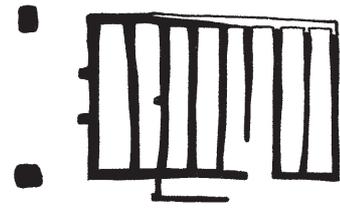
d) CASTLESHAW



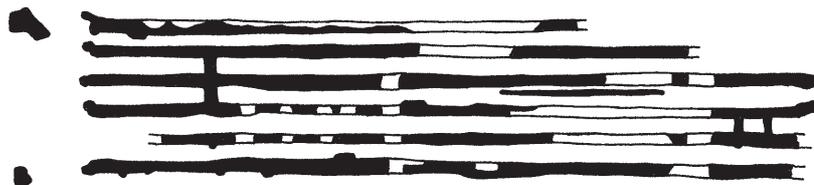
e) CARDEAN



f) RICHBOROUGH 1



g) OBERSTIMM



h) RICHBOROUGH 2

FIG. 4.7 Comparative plans of *horrea*: a. Elginhaugh; b. Inchtuthil; c. Pen Llystyn; d. Castleshaw; e. Cardean; f. Richborough

process of filling and emptying the granary more efficient. With the possible exception of one extraneous post-hole (1246) at the eastern end of Granary 2, there is no evidence that separate loading platforms were provided at Elginhaugh unless, as has been argued (Manning 1975b, 113–15), they were integral to the building (below 4.3.3).

There is considerable variation in the recorded sizes of granaries (Manning 1975b, 108), but the examples from Elginhaugh fall somewhere near the mid-point for auxiliary forts. In the light of Tacitus' statement that Agricola ensured that his troops in garrison had supplies sufficient for a whole year (*Agricola* 22), numerous attempts have been made to calculate the grain storage capacity of granaries, usually in order to relate such figures to the likely garrison. But there are so many uncertainties about the calculations that the resulting figures are of little absolute value. An alternative and much simpler approach, less reliant on assumptions, is to relate the amount of space devoted to granaries to the total area of the fort to see whether there is any pattern in the data. When this calculation is attempted for those few sites for which we may be reasonably confident of the completeness of the information, there is a remarkable consistency of result (TABLE 4.2).

Even allowing for the possibility of two unbuilt granaries, the relative granary area at Inchtuthil is considerably less than for the other sites. Since its predominantly infantry garrison is not in doubt, this may lend support to the view that all of the auxiliary sites in the list contained an element of cavalry and hence required additional storage space within the granaries for animal feed.

TABLE 4.2: AREAS OF GRANARIES IN RELATION TO FORT SIZES

Site	Internal area (m ²)	No. of granaries	Total granary area (m ²)	% of fort area
Baginton II	11331	2	404	3.6
Elginhaugh	12600	2	460	3.7
Fendoch ¹	14973	3	508	3.4
Inchtuthil	199112	6	3184	1.6
Pen Llystyn ²	15580	2	540	3.5
Strageath	14981	2	653	4.4

¹ This includes a putative third granary, constructed on parallel longitudinal trenches and situated in the central range immediately behind the standard pair, which was described by the excavators as one of a pair of open-ended buildings (Richmond and McIntyre 1939, 137).

² The width of the granaries is assumed to equate more closely to the minimum length of the parallel construction trenches rather than to relate to the fortuitous survival of post-impressions. That the granaries were indeed wider than the excavator estimated is indicated by the line of intermediate post-holes, similar to those more systematically recorded at Elginhaugh, extending beyond the supposed width of the better-preserved granary (Hogg 1968, fig. 10).

4.3.3 CONSTRUCTION AND RECONSTRUCTION

The distinctive feature of Roman military granaries is the provision of a raised or suspended floor in order to keep the grain both cool and dry, as well as reduce the possibility of rodent attack. At Elginhaugh this raised floor was supported by means of a grid of posts set within the 17 parallel transverse construction trenches in each granary. The spacing between these trenches, and thus between the rows of posts, was *c.* 1.5m centre to centre. A similar spacing between the posts within each trench seems likely as this figure, approximating to 5 Roman feet, occurs at other sites with some frequency (Manning 1975b, 106–7). Additional support was provided by a row of posts on each side of both granaries set in individual pits located between each pair of transverse trenches. Such an arrangement is unique in Britain, though

something similar was sketchily recorded at Pen Llystyn, where the pits were thought to have occurred only between alternate trenches (Hogg 1968, 133), while at Cardean three complete rows of post-holes ran across the width of the granary between alternate trenches, but only in the centre of the building (fig. 4.7; Robertson 1977, 69; Woolliscroft and Hoffmann 2006, 162–4).

The construction trenches were consistent in their width (0.3–0.4m) but often quite shallow (0.17–0.4m) (e.g. FIG. 4.8c), though this may be accounted for to some extent by the particular difficulty in seeing the trenches at higher levels in this area and concomitant over-enthusiastic secondary machining. Post-impressions were few and confined to Granary 1, two in trench 217 and one in trench 235. All three were circular, the first two *c.* 0.1m in diameter, the third (1964) 0.22m. They were discovered only because they penetrated 0.12–0.2m below the bottom of the construction trenches (e.g. FIG. 4.8c). The use of circular posts is a common feature in granaries (Manning 1975b, 106) and provides further evidence of the use of unseasoned timber in fort buildings (below 12.3). The apparently deliberate setting of posts below the bottom of the trenches is less common, but paralleled elsewhere, notably at Cardean (Robertson 1977, 69), and confirms that the building was of post-trench construction and not based on sleeper-beams as is sometimes suggested (e.g. Richmond and McIntyre 1939, 141).

The intermediate pits were much more varied in their shape and dimensions and on average slightly deeper (0.27–0.46m) (FIG. 4.8a and d), but this is unlikely to have had any structural significance. Although most were separate entities, in several cases the post-pits were contiguous with the construction trenches, confirming their contemporaneity. In only two cases were post-impressions recorded (1965 and in pit 283): as with the examples from the post-trenches they were subcircular, some 0.2–0.3m in diameter (e.g. FIG. 4.8d). The post-pits for the loading bay were generally subcircular and varied considerably in surface dimensions, from 0.6 to 1.3m in diameter. The examples sectioned were straight-sided and flat-bottomed, their depths ranging from 0.32 to 0.88m, the deepest (pit 1270, FIG. 4.8b) protected by its proximity to a road junction.

Because the archaeological remains relate primarily to the sub-floor features, the details of granary superstructures are even more a matter of conjecture than those of other buildings. Accordingly, there have been several suggested reconstructions of Roman timber granaries, including one full-scale, three-dimensional simulation (Hobley 1982). A fundamental question is whether any of the sub-floor posts continued up into the building. Manning (1975b) has argued that none did so because of the difficulty of jointing together circular timbers; the frequency with which the timbers of the substructure appear to have been left to rot in situ; the problems that would result in the superstructure from minor errors of the positioning of sub-floor posts; and finally the absence of differential trench depths or post sizes (Manning 1975b, 109–12).

While it is not necessary to continue the sub-floor posts into the superstructure, Manning's objections are not sufficiently strong to disprove the possibility. Posts of circular cross-section are surprisingly commonly recorded in other buildings, including gateways (Hanson 1978, 302, tables 3 and 4), and the leaving of posts to rot in situ is not confined to granaries, as the surviving gate and tower posts at Elginhaugh demonstrate (below 10.9.1); the potential effect on the superstructure of errors in positioning posts are no more marked for granaries than any other building; and finally, there are indications from one or two sites of post sizes or trench depths greater than the norm. This particularly applies to examples of granaries which were provided with a construction trench connecting the outer ends of the transverse sub-floor trenches, as at Richborough 1 (Cunliffe 1968, 10), Oberstimm (Schönberger 1978, 62–4) (FIG 4.7) and Valkenburg, where it has prompted yet another postulated reconstruction (Groenman-van Waateringe 1990).

In the above cases it seems most likely that these deeper longitudinal trenches mark the outer walls. Elsewhere, determining the width of the granary is problematic. It was at first thought that the intermediate post-holes at Elginhaugh marked the line of the outer walls, but the difficulties of maintaining a straight line through the rows, and the discovery of a post-impression (1964) in Granary 1 which would then have fallen outside the building,

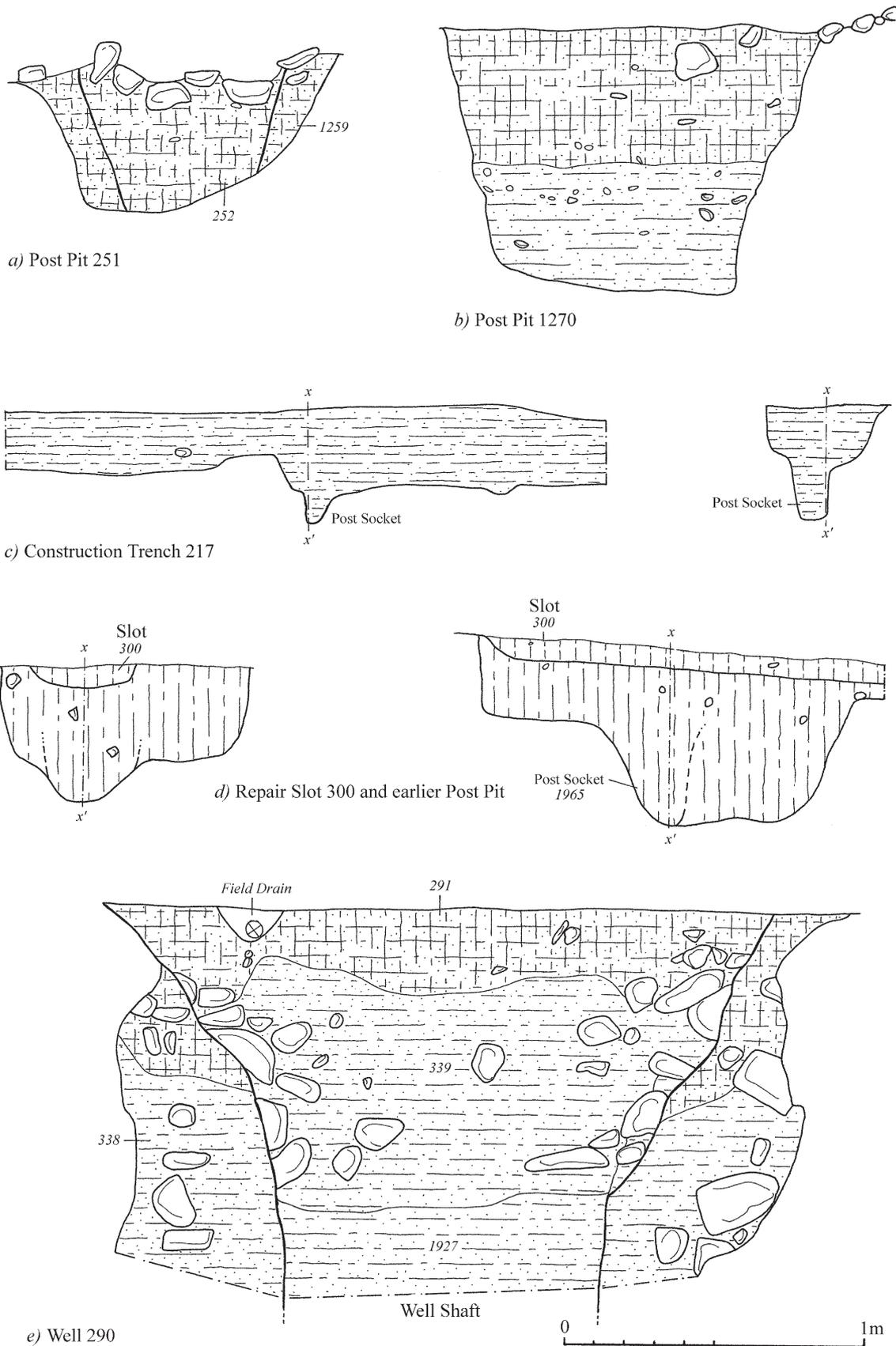


FIG. 4.8 Sections through features in the granaries: a. post-pit 251; b. post-pit 1270; c. construction trench 217; d. repair slot 300 and earlier post-pit; e. well 290

prompted re-assessment. Assuming post-impresion 1964, which is markedly larger than the two in trench 217, marked the south wall of Granary 1, and some general degree of symmetry in the disposition of posts, an external width of *c.* 9.5m seems likely, though that still presents slight problems incorporating two of the transverse trenches (229 and 231) which must originally have extended slightly further towards the *via principalis*.

There is no direct evidence from Elginhaugh to suggest that any internal posts continued up from the sub-structure, but, in addition to the side and end walls, it is generally agreed that two internal roof supports would have been needed (Manning 1975b, 112). These need not necessarily have been provided in every transverse trench, but rather in alternate trenches. This would give a grid of posts to roof height at approximately 3m centres.

If the above calculation of the width of the granaries is correct, the loading bays at each end did not stretch across the full width of the building. Since their function was to provide cover during loading or unloading, neither need they have supported a continuation of the full-pitched roof; some form of lean-to cover would have performed the required function adequately (*contra* Manning 1975b, 113). There is no evidence from Elginhaugh that any form of loading platform was provided. These are frequently assumed as a necessity (Manning 1975b, 113–14), though they are not particularly common in stone-built granaries (Gentry 1976, 12). It would be perfectly possible for wagons to back up to the door, or more likely double-doors, of the granary and unload at approximately the same level as its raised floor. A figure around 0.75–1m is usually assumed in accordance with recent practice and the recorded heights of raised floors in stone-built granaries (Manning 1975b, 109). The largest wheels recorded from military contexts in Britain are some 1.13m in diameter (Manning 1985b, 293), which would suggest a wagon-bed height of *c.* 0.7m. Any ramp or light steps facilitating access to the granary from ground level would have been low enough for wagons simply to back over them.

There were no roofing tiles recorded from the area of the granary, or indeed from any other part of the fort (below 10.9.3), so that the roof is likely to have been made up of planks or shingles. Thatch could have been used, but would have provided an ideal refuge for pests. The same objection will no doubt have influenced the choice of material for the infilling of the walls, making the use of wooden cladding more likely than wattle and daub. Indeed, compared to other buildings within the fort there was a notable absence of burnt daub within the upper levels across the area of the granaries. The same phenomenon has been noted at Usk, Baginton and Crawford (Manning 1975b, 113).

4.3.4 STRATIGRAPHY AND PHASING

Only one structural phase is attested in the granaries, but there are clear signs of various repairs. Most obvious is the insertion of a secondary transverse slot (300), possibly in two parts, towards the front of Granary 1. This was very shallow, surviving to a depth of only *c.* 0.07m. At its northern end it overlay an adjacent primary post-trench and clipped an intermediate post-hole, while at its southern end it cut into the top of a second post-hole removing the post it contained (1965) in the process (FIG. 4.8d). Presumably associated with the same repair were two post-holes that overlay slot 302, and three small post-holes abutting trenches 235 and 298. It is noticeable that the replacement slot falls short of the postulated position of the walls of the granary at both ends. This would suggest that the repair was achieved simply by removing the floor to insert new posts or replace old ones without affecting the rest of the superstructure.

Other more minor repairs were evident elsewhere in the granaries. One of the intermediate post-holes in the centre of the south side of Granary 1 had been replaced by a slightly smaller, subcircular post-hole (251). This cut the adjacent trench and, along with the primary pit (1259), was in turn sealed by a layer of small cobbles (FIG. 4.8 a). Similarly two post-holes (320 and 1230) cut construction trenches in Granary 2.

Given the potential loads that they would have had to bear, attested repairs to granaries are surprisingly uncommon. The best parallel is provided by the early granaries at Richborough where both additional trenches and duplicate posts within, or at the side of, trenches were

recorded (FIG. 4.7; Bushe-Fox 1949, 26–8, pl. 98). The same granaries at Richborough also provide an analogy, though no explanation, for the short irregular cross trench that joins the southern ends of trenches 298 and 302. That it is linked in some way to the major repair of Granary 1 seems likely given its location and the absence of any other evidence of lateral trenches, though it was not established as a secondary feature. It lies outside the postulated line of the south wall of the building and may indicate that some additional buttressing of the wall was required at this point.

In the absence of burnt daub, there is no clear evidence of a demolition phase in the granaries, though the presence of charred cereal remains in structural contexts (below 4.3.5 and 11.2.3) is best explained as the result of the demolition process. There is evidence to suggest, however, that the granaries had been removed before the final phase of use of the site. Heavy cobbling partly overlay the *via principalis* at its junction with the *via sagularis* and originally continued over the southern post-hole (1270) of the loading bay at the east end of Granary 1 (FIG. 4.8b). While this could have been contemporary with the granary, and may have been laid as hard-standing within the loading bay after its erection, the rough nature of the cobbling and its similarity to that found overlying the northern end of Barrack 5 on the other side of the *via principalis* favour a later date. The cobbling may originally have been more extensive but lost to the plough. Moreover, less is recorded on FIG. 4.6 than was originally observed as it was over-zealously removed before it had been planned in its entirety. That it survived where it did is no doubt the result of the protection afforded by the collective mass of the adjacent roads.

In addition, the two wells (290 and 1238) in the immediate vicinity of Granary 2 are likely to have been of secondary construction. Both were located rather too close to the granary to have been in contemporary use without posing potential structural hazards, while the construction pit for one (1238) partly overlay a construction trench and one intermediate post-pit. This adds to the evidence of the post-fort use of the site by the Roman army (below 12.1). Well 1238 was only partially examined because it had been disturbed by a modern borehole, part of the assessment of the site by the Scottish Development Agency. Removal of the first 0.5m of filling revealed a circle of cobbles 2m wide similar to that in the second well (290) which was more thoroughly investigated. Here the cobble lining was well preserved. It was found to have been rammed into the sides of the construction pit and roughly coursed to form a solid revetment for the inner shaft 1.05m in diameter (FIG. 4.8e). The water table restricted conventional excavation below 1.3m without recourse to pumps and extensive shoring, so to save time, once the excavation of the immediately surrounding area had been completed, a large box of soil was removed by machine to act as a sump leaving the remains of the well upstanding in the centre. This drastic technique allowed excavation to a depth of 2.2m. Approximately 0.8m of the wattle lining (1390) of the shaft survived, identical in construction, but not so well preserved, as that in the well in the *principia* (above 4.1.1). The withies were mainly hazel with some alder; the sails largely oak with hazel and alder again (below 11.3.2). Samples were taken from the upper fills for botanical analysis (below 4.3.5 and 11.2). The nature of the material recovered suggests that the well may have been contaminated with the dumping of the products of crop processing (below 12.5). Though both wheat and barley were represented, the latter seems to have been the more important crop (for a discussion of the significance of this and other post-fort remains see below 12.1).

4.3.5 ASSOCIATED FINDS

Charred remains of cereals and various other species were recovered from most of the construction contexts excavated, both transverse trenches and intermediate pits (below 11.2). Though similar finds were not recorded in such contexts elsewhere in the fort, the correlation with the generally accepted function of the buildings as granaries still requires explanation. Charred remains must derive from material which has been indirectly subject to heat. In a Roman fort that would be either from ovens, heating fires or minor industrial processes, none of which ought to have been taking place close to the granaries, though the proximity of the workshop is worthy of note. However, this would not explain how the material found its way

into the filling of trenches dug in the course of the construction of the granaries, unless it is argued that they were a later addition. It seems more likely, therefore, that these charred remains came to be deposited during the demolition phase when there are likely to have been quantities of loose grain in the vicinity. Bonfires would have provided the heat source and the digging out of posts would have disturbed the construction trenches sufficiently for the carbonised grain to have become incorporated in their fills without this disturbance being readily detectable archaeologically.

Construction contexts

- 232, fill of construction trench 231, Granary 1: carbonised emmer, spelt and bread wheat
 240, fill of post-hole 239, Granary 1: carbonised spelt and bread wheat and some barley, 1 sherd of plain samian
 284, fill of post-hole 283, Granary 1: carbonised emmer and spelt wheat and some barley
 270, fill of post-hole 269, Granary 1: tile fragment
 363, fill of construction trench 362, Granary 2: carbonised barley and some wheat
 1251, fill of construction trench 1250, Granary 2: 1 nail
 252, fill of repair post-hole 251, Granary 1: carbonised spelt and bread wheat and barley, 1 nail
 1244, fill of post-hole 1242, loading bay Granary 2: 1 sherd of prehistoric pottery

Post-fort contexts

- 291, upper fill of well 290: 1 sherd of amphora, two cattle teeth, charcoal
 338, fill of construction pit for well 290: a few grains of carbonised barley, fir charcoal
 339, upper fill of well 290: carbonised wheat and barley, large quantities of oat chaff, some cereal bran, 1 piece of unidentifiable copper alloy, 15 sherds of amphora, daub, 1 piece of bottle glass, 1 nail, 1 piece of burnt bone, heated clay
 1239, upper fill of well 1238: 1 sherd of amphora, 2 fragments of burnt animal bone
 1390, lining of well 290: oak, hazel and alder wattle and sails (below 11.3.2)

CHAPTER 5

THE FORT – THE *RETENTURA*

5.1 BARRACKS 1 AND 2

5.1.1 DESCRIPTION

Barracks 1 and 2 were located in the western half of the *retentura* (FIG. 5.1), aligned east–west running parallel with the *via principalis* (*per scamna*). Barrack 1 backed onto the *via sagularis*, though this had been largely ploughed away, while Barrack 2 was located immediately behind the *praetorium*, separated from it by an unmetalled alley 3m wide. These barracks were the first buildings to become visible during the machine stripping of the topsoil, their construction trenches showing up well in contrast to the sandy subsoil in that part of the site (PLATE 5.1). It soon became apparent, however, that this area had suffered most from plough damage, for, except towards both their western ends and the eastern end of Barrack 1, the worm-sorted horizon which masked the trenches elsewhere on the site had been almost entirely removed. As a result a number of the construction trenches for the internal partitions between *contubernia* in Barrack 1 were not detected in their entirety, and at least one seems to have been missing completely.

Each block was of simple rectangular plan measuring 44.4m by 8.4m externally. Within those dimensions, however, was a certain amount of variation: the south wall of Barrack 1, for example, was some 0.5m longer than the north, while the width of the same block varied between 8.35m and 8.75m. Indeed, it would have been difficult to maintain a straight wall-line within the construction trench for the south wall of Barrack 1. The barracks faced each other across a 5m wide metalled road, but neither was provided with a veranda. The internal layout was the same in both blocks: they were centrally divided along their length with the officers' quarters occupying the first 10m at the western end, adjacent to the rampart.

The men's quarters consisted of ten sets of double rooms (*contubernia*), each room measuring internally 4.1m by 3.3m on average. Approximately centrally located in the front room of almost every *contubernium*, and in the rear room also in at least one example in Barrack 2, was an amorphous area of discoloured subsoil (PLATE 5.1). These features tended to be longer than they were broad with their long axis aligned north–south across the length of the room. Several examples were positioned slightly more towards one side of the room. Where this phenomenon was apparent, the shift to one side was consistent within each block, but different between the two facing blocks, slightly offset towards the eastern end of Barrack 1 and towards the western end of Barrack 2. The texture of the soil was consistent both within and beyond the areas of staining and there was no sign of any associated cut, so they do not represent the infilling of any feature penetrating the subsoil. They ranged in size from as little as 1.5m by 0.6m to 3.6m by 1.4m, penetrating to a maximum depth of 0.2m where sampled. The core of each stain was red/brown, shading to orange towards the edges, but there were no traces of burning, neither charcoal, ash nor burnt daub. Since their interpretation is both problematic and crucial to the wider interpretation of the function of the barracks, they are discussed in more detail below (5.1.2).

The only other internal feature detected in the men's quarters was a shallow, straight-sided, square pit (439) (FIG. 5.3a) of unknown function in one of the rear rooms of Barrack 1. Its contemporaneity with the occupation of the barrack cannot be proven, but its regular shape

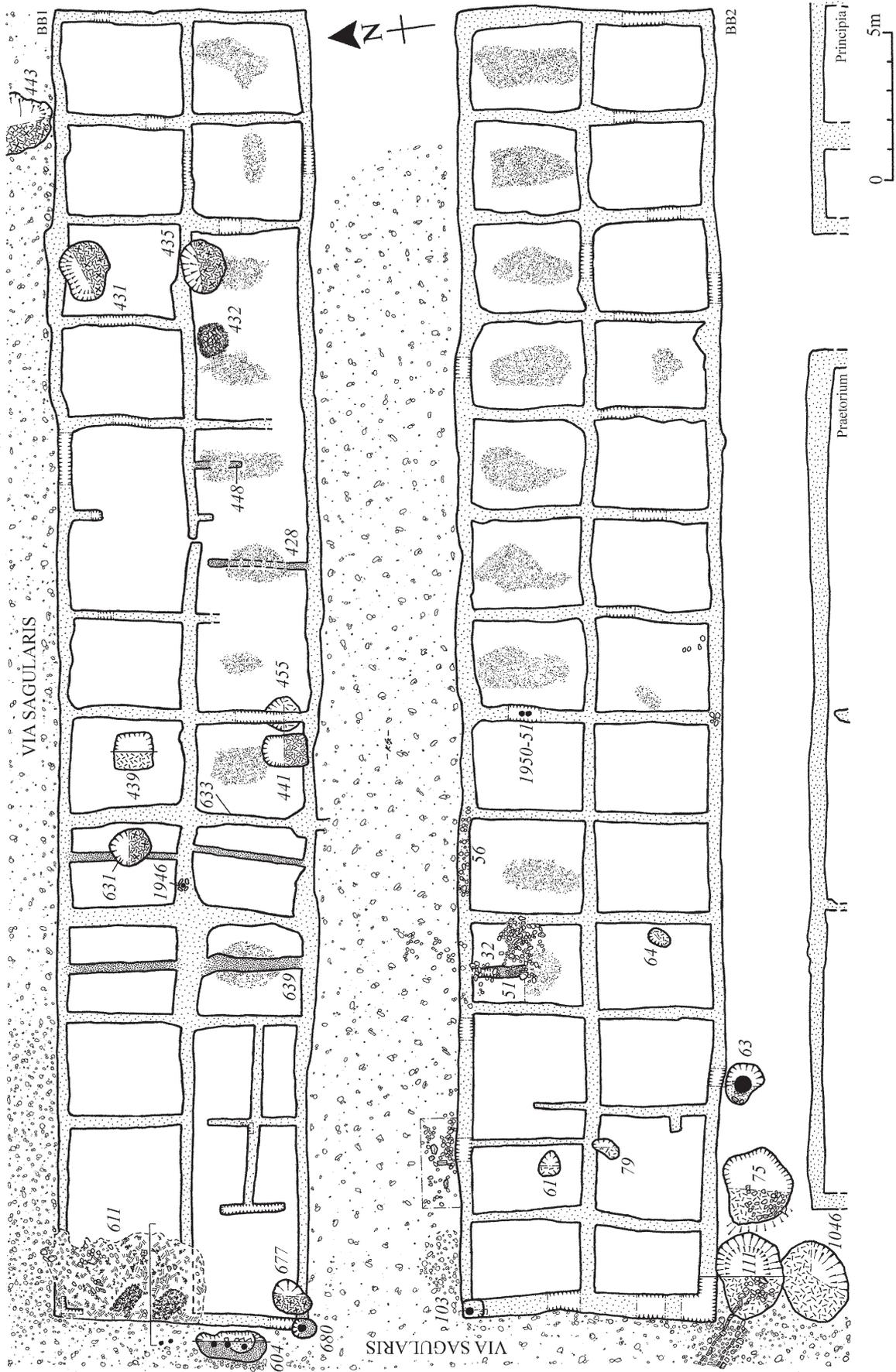


FIG. 5.1 Plan of Barracks 1 and 2



PLATE 5.1 Barrack 2; view east

makes its interpretation as a demolition pit less likely. It contained a few grains of charred cereal, mainly barley, and some weed seeds in its lower fill (below 11.2), though its upper fill contained a variety of finds, including daub, probably derived from demolition, suggesting that it was still open when the barrack was dismantled. One very shallow post-setting (64) in the first *contubernium* adjacent to the officers' quarters in Barrack 2 may have housed some form of internal fixture, but seems more likely to have provided additional support for the structure given the other evidence of repairs to the building (below 5.1.4).

There was some minor variation between the two sets of officers' quarters. In Barrack 2 the subdivision into rooms followed broadly the pattern of the men's quarters, though the north-south running division between the first two pairs of rooms from the west was slightly offset to create a broader central room and concomitant narrower end rooms. However, the central room on the north side had been reduced in width to 2.4m and the adjacent third room additionally subdivided by a partition wall across half its width to create a 1.15m wide cupboard or cubicle. A short wall stub formed an alcove or cubicle 1m wide and 0.6m deep in the south-east corner of the middle room adjacent to the rear wall of the building. Whether this originally formed a further subdivision running east-west across the middle room is uncertain, for the trenches were particularly difficult to discern in this part of the building where they were

both cut into and filled with sandy silt. There were no internal features detected except one shallow scoop (61), possibly for a post, though this seems more likely to be a later repair (below 5.1.4).

In Barrack 1 the pattern of subdivision encountered in the men's quarters continued only in skeleton form at the officers' end. The tripartite division was maintained on the south side, though neither of the cross walls ran the complete length of the rooms and the inner two were further divided by an east–west wall effectively creating four cubicles. On the north side there was only one partition forming a standard room, leaving a double-sized room in the north-west corner. There was no evidence of any special arrangements for flooring despite the sealing of the original ground level by the collapsed walling (611) at the western end of the block.

5.1.2 INTERPRETATION AND ANALOGIES

The identification of buildings 1 and 2 as barracks is superficially straightforward on purely morphological grounds alone. The overall size of the men's accommodation lies neatly within the attested norm, as do the sizes of the individual *contubernia* (Davison 1989, 89, 97). The officers' quarters are clearly distinguished by the provision of additional and irregular subdivisions and, as is usually the case, were at the outer or rampart end of each block. Indeed, the barracks fall into a common category of rectangular accommodation blocks within auxiliary forts (FIG. 5.2). The provision of ten *contubernia* in phase 1 would, on standard assumptions about the number of men per *contubernium*, give a barrack total of 80 and indicate that each block was intended to house a century of infantry troops. The proportion of the block given over to the officers' quarters (TABLE 5.1) also fits neatly into the norm for infantry barrack blocks (Davison 1989, 91–2), though in the Flavian period barracks with wider officers' quarters and verandas are slightly more common than the simple rectangular form attested at Elginhaugh (Davison 1989, 74). Closest parallels are provided at Pen Llystyn and Strageath (FIG. 5.2; TABLE 5.1), though in both of those cases the blocks are found in combination with the more common L-shaped type.

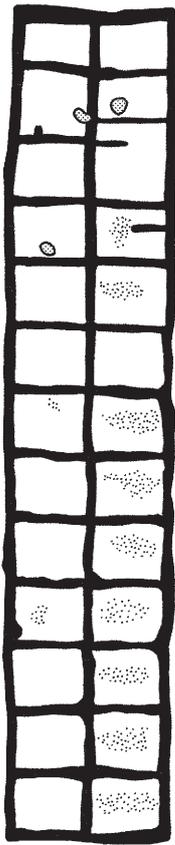
However, the possibility that the buildings might be stables, or rather stable-barracks providing shared accommodation for both horses and men, must be seriously considered given one of the postulated interpretations of the amorphous orange-red stains in the front rooms of the *contubernia*. Two hypotheses were considered, the first that the stains in the subsoil were caused by the differential oxidation of the minerals within the sandy subsoil as a result of indirect heat emanating from centrally located hearths or braziers, and the second that they were created by a chemical reaction to the passage through the soil of horse urine. Accordingly, samples for both chemical and magnetic analysis were extracted. The results, however, proved inconclusive, though it was noted that the reddening did not resemble that due to burning as much as that due to the precipitation of Iron III compounds, and no positive response was obtained to tests for remanent magnetism (below 11.4.3).

The provision of heating within *contubernia* is common, though hearths are more frequently attested from excavations in Germany than in Britain. However, they are usually found set against the central partition wall in the sleeping room at the rear (*papilio*), though are

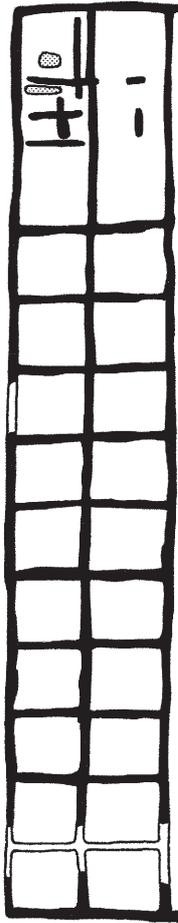
TABLE 5.1: FLAVIAN RECTANGULAR BARRACK BLOCKS (EXTERNAL DIMENSIONS)

Site	Overall		Officer's quarters	
	Length	Width	Length	% of total
Elginhaugh 1–2	44.4m	8.4m	10m	22.5
Elginhaugh 5–7	47.6m	8.5m	12m	25.2
Elginhaugh 9–10	47.3m	8.3m	11.2–11.8m	23.7–24.9
Elginhaugh 11–12	47.2m	8.1m	11.3–11.9m	23.9–25.2
Pen Llystyn R5	47.2m	8.4m	11.8m	25
Strageath IV	47.5m	8.5m	11.3m	23.8

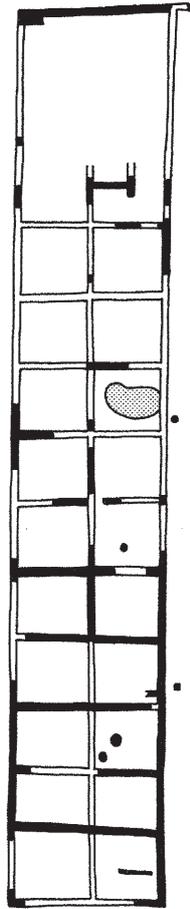
a) ELGINHAUGH 2



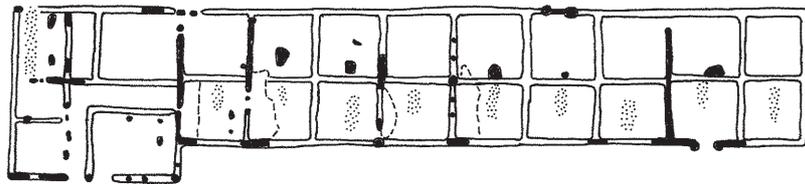
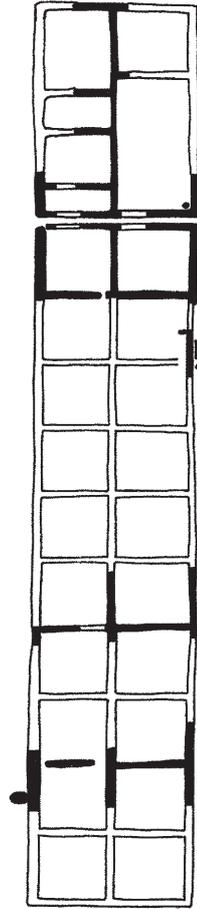
b) ELGINHAUGH 10



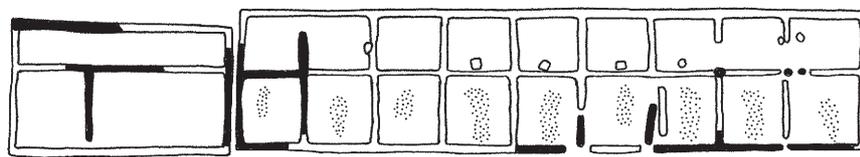
c) PEN LLYSTYN (R5)



d) STRAGEATH 4



e) WALLSEND



f) SOUTH SHIELDS

0 20m

Key —
Pit ●

FIG. 5.2 Comparative barrack plans: a. Elginhaugh (2); b. Elginhaugh (10); c. Pen Llystyn (R5); d. Strageath (4); e. Wallsend; f. South Shields

occasionally attested in a variety of other locations (Davison 1989, 231), including the middle of the front room. Such a location may be attested in a period 2 barrack at Oberstimm, where elongated pits with an ash-like fill were interpreted as a form of canalised heating system (Schönberger 1978, 110–12), though with hindsight these features too might better be re-interpreted as urine pits (Hodgson 2003, 76; see below). The front room is usually regarded as the place where equipment and personal possessions were stored (*arma*), though this was clearly not the primary function of the front rooms provided with hearths attested in the early third-century barracks at South Shields (Hodgson and Bidwell 2004, 140). A single secondary hearth (432) is attested at Elginhaugh in one *contubernium* in Barrack 1 situated towards the rear of the *arma* (below 5.1.4). That it should survive while no hearths from phase 1 did so is presumably a reflection of its construction in stone and concomitant greater visibility during excavation. However, the much smaller size of the hearth and the limited discolouration of the soil around it make it less likely that the more widespread staining from the earlier phase was the result of internal heating arrangements, unless sizeable moveable braziers had been employed.

The best analogies for the stains, however, at least in terms of surface dimensions and location, are provided by shallow pits or scoops which were originally identified in two barrack blocks at Dormagen in Germany, where environmental and chemical evidence, specifically the recovery of hay and horse fodder in the pits and the higher phosphate levels around them, confirmed that they did relate to the stabling of horses (Müller 1979). Subsequently, Sommer examined further examples of such pits at Ladenburg identifying what he called *Stallbaracken* (stable-barracks) there and postulating other examples at a number of sites in Germany (1995). Most recently stable-barracks have been extensively excavated at two sites at the eastern end of Hadrian's Wall, Wallsend and South Shields (Hodgson 2003, 37–71; Hodgson and Bidwell 2004, 124–5), and further possible examples from Britain and the Danube frontier assembled by Hodgson (2003, 71–80) (FIG. 5.2). The one crucial difference between all these sites and Elginhaugh, however, is the absence of any associated pit or scoop at the latter. That said, the preservation of cut features in this area of the site was poor. This was the result of either severe plough truncation or the general difficulty of identifying cuts at higher levels within the soil profile and the subsequent removal by machine of the worm-sorted upper soil horizon at an early stage in the excavation (above 1.2). Given the number of stable-barracks that have now been positively identified in the north-western provinces of the Empire, the probability that these features do indeed represent staining from animal urine penetrating beneath shallow pits or scoops is high, particularly as the soakaway pits recorded at Wallsend were quite shallow, ranging from 0.18 to 0.4m in depth (Hodgson 2003, 40–4). Further support for the housing of horses within the fort at Elginhaugh is provided by the presence of several harness fittings (below 10.5.2, nos 15–22), one junction loop (no. 20) coming from the upper demolition fill of pit 75 between *praetorium* and Barrack 2, and the high incidence of carbonised barley in the macroplant samples taken across the fort (below 11.2.7). More specifically, pits 439 and 435 in Barrack 1 both contained quantities of carbonised barley, while the latter also contained oats and some straw (below 11.2.3), possibly derived from animal feed and bedding.

With their heads against one of the side-walls of a *contubernium* (below 5.1.3), the room depth of 4.1m would provide ample space for three horses to be tethered side by side. Though this would allow slightly less than the 1.52m per horse recommended by a War Office manual of 1904 for horse lines (Davison 1989, 137), it is clear that the horses used by the Roman military were smaller than modern examples, averaging less than 14 hands (1.42m) compared to some 16 hands (1.63m) to the withers (Luff 1982; Peters 1998). Indeed, the space available is slightly in excess of that in the timber phase stable-barracks at Wallsend (Hodgson 2003, 83). On the basis of the reconstruction postulated by Hodgson and Bidwell (2004, 133–5), following Sommer (1995), each *contubernium* would then have accommodated three troopers in the rear room with their horses at the front. Accordingly, each stable-barrack would have housed a *turma* of 30 cavalymen in the *contubernia*, with their decurion and perhaps one or more of the *principales* in the officers' quarters. This would give a *turma* strength of 31–3, very close to the traditionally accepted figure (for further discussion see 12.2 below).

The remodelling in phase 2 (below 5.1.4) reduced the number of *contubernia* to eight or nine, increased the proportion of the officers' quarters to 26% of the total and appears not to have provided soakaways for horse urine. This may suggest a change in garrison from a cavalry *turma* to an infantry cohort, the latter presumably with a slightly reduced strength, the larger officers' quarters reflecting the higher rank of the centurion compared to the decurion, but this may be placing too much emphasis on relatively slight and poorly preserved changes to the accommodation. In this context it should be noted that the first phase stable-barracks at Wallsend had only nine *contubernia*, interpreted by Hodgson as indicating a *turma* strength of only 30 (2003, 86–9).

5.1.3 CONSTRUCTION AND RECONSTRUCTION

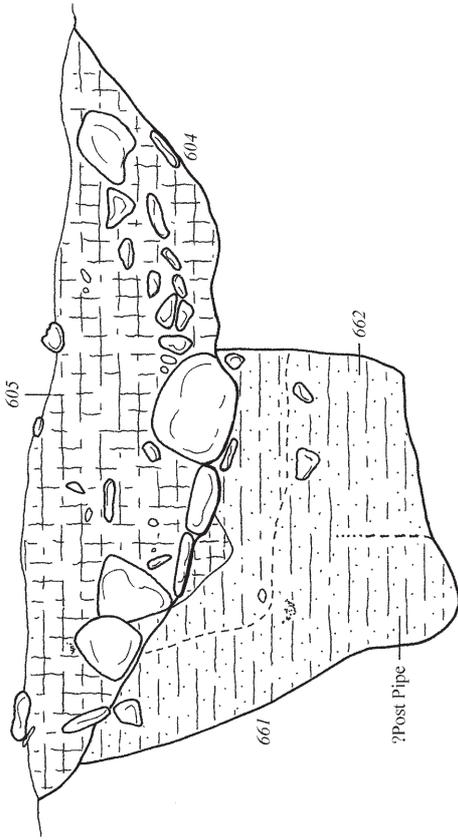
Apart from the western end wall of Barrack 2 and part of the central wall in Barrack 1, which was probably enlarged during remodelling (below 5.1.4), the construction trenches for the main walls were 0.3–0.5m wide and up to 0.83m deep (e.g. FIG. 5.3c). Those for the partition walls tended to be both narrower (0.2–0.4m) and shallower, up to 0.55m deep, which would explain their more frequent disappearance over the most truncated part of Barrack 1. The trenches were backfilled in the main with silty sand and in places, especially at the officers' end of Barrack 2, were extremely difficult to detect (PLATE 5.1). Except for one or two partitions in the officers' quarters and in places where they had been truncated, the construction trenches were continuous throughout each barrack. For no apparent reason one partition trench (633) in Barrack 1 continued beyond the line of the outer wall. This presumably represents an error in laying out and confirms that the full outline of the building was set out before the internal roads were laid down.

There is no indication that the construction trenches were other than intended to hold individual ground-fast posts, though few post-impressions were detected in either barrack. A layer of unburnt clay/daub, burnt daub and patches of charcoal (611) up to 0.2m thick (FIG. 5.3c), which respected the line of the construction trench of the end wall of Barrack 1, is best interpreted as collapsed walling and serves to confirm the use of wattle and daub construction. The two linear concentrations of charcoal within it are probably the remains of wattle panels. Fragments of charcoal recorded included withies of *c.* 0.02m diameter.

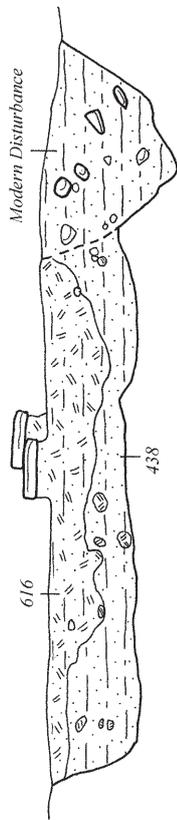
Most post-impressions came from later repairs. Only three could be primary (1946, 1950 and 1951), measuring 0.22m, 0.2m and 0.2m in diameter respectively, but even they probably also relate to remodelling or repair (below 5.1.4). Those impressions which were definitely secondary tended to be large, ranging from 0.15m to 0.6m, and closely spaced when they appeared in groups, as in pit 604 outside the west wall of Barrack 1 (FIG. 5.3b).

There is no indication from the size of the posts or the depth of the trenches to indicate other than a single-storey structure. The differential post-trench depth between the outer and median walls, and the lateral partitions suggests that only the former were load-bearing. This would seem to suggest a simple, probably low-pitched roof whose ridge was supported by the central wall. The complete absence of roofing tile from the site (below 10.9.3) would suggest that shingles or some other form of organic material were used.

With the exception of one internal wall in the officers' quarters in Barrack 1, there were no gaps in the wall-trenches to indicate the location of doorways. However, the size and location of the stains from soakaway pits is instructive in this regard. Given the intended function of the pits to collect urine, that they were aligned across the length of the room indicates that the horses must have been tethered to one of the side-walls of the *contubernia*. The tendency of the pits to be located slightly off centre in each *contubernium* further suggests that the horses would have had their heads against the side furthest from the pits, leaving space behind their hindquarters for a walkway from the front entrance to the rear accommodation for the troopers. This would have resulted in the horses in the two barracks facing in opposite directions, so that the doorways to the *contubernia* would not have been directly opposite each other, a sensible arrangement if horses were to be led in or out of the two blocks at the same time.



b) Repair Post Hole 604



a) Pit 439

c) Collapsed Walling 611

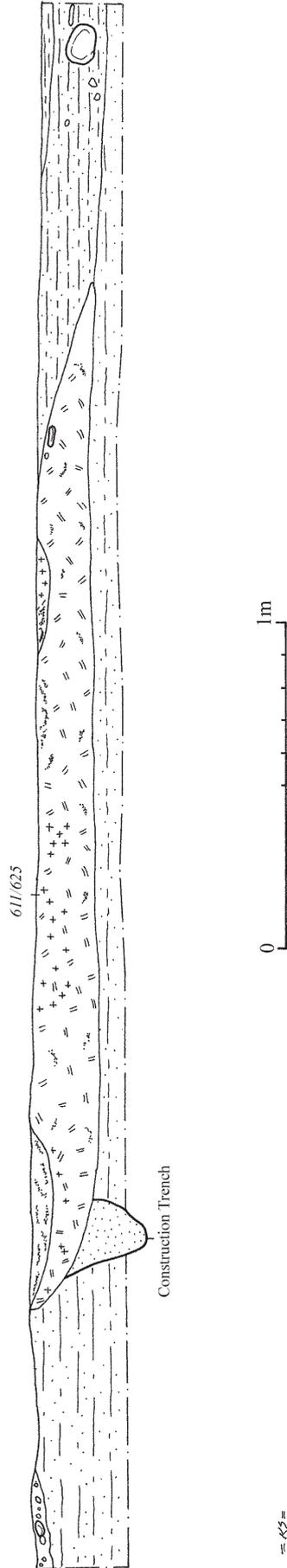


FIG. 5.3 Sections through pits and structural features in Barrack 1: a. pit 439; b. repair post-hole 604; c. collapsed walling 611

5.1.4 STRATIGRAPHY AND PHASING

Barrack 1 was one of the few buildings in the fort that provided clear evidence of more than one phase of use. A pit (455) 1.2m in diameter and 0.38m deep, containing Roman pottery, was cut by a construction trench for one of the internal *contubernia* divisions. Though earlier than the barrack, it may represent no more than tidying up by the construction party, for it contained burnt material. However, a second structural phase was also evident. Four of the primary *contubernia* had been bisected by walls running across the width of the building. These subdivisions were clearly secondary for in three cases (428, 448 and 639) they cut through the amorphous orange-red stains in the centre of the primary *contubernia*. They were best preserved nearest to the officers' quarters, where the central longitudinal construction trench was also noticeably wider. The presence of an individual stone-chocked post (1946) within that trench is probably also linked to these changes, since such stone-chocking was not otherwise attested and most other visible post-impressions seem to relate to rebuilding or repair. These subdivisions were probably the surviving remains of a complete recasting of the interior of the barrack. Secondary subdivisions are likely to have been based on shallower construction trenches than primary ones (see below) and hence their poorer survival in an area of heavy plough truncation. The external walls were unaffected by these changes, but the officers' quarters were increased in length by some 1.7m, and the position of the *contubernia* adjusted as a result. A subcircular hearth (432) 1.1m in diameter, made up of burnt sandstone blocks on a thin layer of clay set into a shallow scoop, probably also relates to this phase as it would otherwise have impinged upon the restored position of a partition between two primary *contubernia*. Insufficient traces of this remodelling were detected to be certain, but it seems likely to have reduced the number of *contubernia* to nine or even eight, and perhaps also changed the character of the accommodation. This has potential implications for the nature of the garrison (above 5.1.2).

There was one hint of a similar reorganisation in Barrack 2. Almost centrally located in the tenth *contubernium* adjacent to the officers' quarters, a length of construction trench (51) overlay the remains of the amorphous orange-red stains, though was not cut deeply enough to penetrate the subsoil. This would again seem to indicate the lengthening of the officers' quarters at the expense of the accommodation for the men.

As with many other buildings within the fort there were clear signs of repair work. Outside the west end wall of Barrack 1 a near vertical-sided pit (661) cut to a depth of over 1m contained traces of a single post-impression 0.25–0.28m wide. It had been replaced by a larger but shallower pit (604) only 0.5m deep, chocked with cobbles and angular stones, which had housed three posts 0.15–0.19m in diameter (FIG. 5.3b). That this end wall was in need of additional support is further confirmed by the presence of two small stake-holes immediately to the north of the pit, and the replacement of the post at the south-west corner of the barrack. Here a separate post-hole (680) containing a large post 0.3m in diameter cut through the original barrack construction trench.

Similar indications of repair were noted in Barrack 2. The construction trench in the north-west corner of this block had been disturbed, dug out to a depth of 0.18m below the bottom of the trench, and a post 0.3m in diameter inserted (103). The only other post-impressions recovered were two (1950 and 1951) very close together in one of the partition walls of the *contubernia*. They were 0.2m in diameter and had been dug some 0.1m below the bottom of the post-trench. Their size and close juxtaposition hints at repair, though they could have been disturbed and enlarged through removal during demolition. Stone chocking at the southern end of the same partition wall trench may represent the location of a further post.

Various individual post-holes or shallow scoops may also denote attempts to shore up the building. Adjacent to the rear wall of the officers' quarters of Barrack 2 was a large irregular post-pit (63) 0.62m deep, packed with sandstone slabs and some large pieces of amphora and other pottery. It contained the impression of a massive post 0.6m in diameter, though the impression may have been enlarged when the post was removed. The filling of the pit would suggest that it was secondary and the size of the post would be appropriate for an additional

wall prop or roof support. Three shallow scoops (61, 64 and 79) within the western third of the barrack may also have held additional supports, though at least two of them might have housed some form of internal fittings (above 5.1.1). The third cuts the construction trench of the central median wall and is, therefore, clearly secondary.

As with most other buildings within the fort there was clear evidence of deliberate demolition. Most of the post-impressions recorded showed signs of disturbance caused by the removal of the post, and the larger ones, notably that within pit 63 and in the north-west corner of Barrack 1, contained burnt daub which must have fallen or washed in after the removal of the post. Indeed, fragments of daub were found scattered across the general area.

Spreads of demolition material were particularly abundant over the officers' quarters at the western end of Barrack 1. Most prominent and important was the layer (611) of unburnt clay/daub, burnt daub and charcoal. Its general make-up and the fact that it respected the line of the construction trench of the end wall of the block suggested that this was, in fact, collapsed walling (above 5.1.3).

Finally, five small demolition pits had been cut through the construction trenches of Barrack 1. They varied in depth from shallow depressions only 0.15m deep (677) to as much as 0.58m (441). Three (431, 435 and 441) contained large quantities of artefacts of various types as well as burnt daub, though the two in the western half of the block (631 and 677) were generally less rich and did not contain daub. Three of the five (435, 441 and 631) contained carbonised cereals, in sufficiently large quantities in the case of pit 435 to raise interesting questions about the source and nature of the material (below 11.2 and 12.5). A sixth pit (443) cut through the *via sagularis* to the north of Barrack 1, also cutting one of the post-holes of the North Gate (below 7.3.4). There were no demolition pits across Barrack 2, though the two pits (75 and 111) between it and the *praetorium* contained demolition material in their upper fills (above 4.2.4).

There is only one slight hint of post-fort use of the area. A small patch of rough cobbling and hard-packed sand (32), associated with quantities of pottery, mainly amphora, and burnt daub, overlay both a primary and the only secondary construction trench (51) in Barrack 2. It was presumably deposited in some slight hollow on the cleared surface and may be linked with other similar traces at the front of the *praetorium* and adjacent to Granary 1 (above 4.2.4 and 4.3.4). The presence of quantities of stone (56) in the upper filling of the north wall of Barrack 2 nearby may give some indication of the further extent of the cobbling.

5.1.5 ASSOCIATED FINDS

Construction and occupation contexts

- 34, 70 and 506, fills of construction trenches in Barrack 2: 6 sherds of coarse pottery, including type 170, 1 sherd of mortarium, 16 sherds of amphora, 1 melon bead, lava quern fragment, charcoal, daub, 1 sherd of prehistoric pottery, 1 flint
- 50, fill of secondary partition 51 in Barrack 2: 9 sherds of amphora, 1 nail
- 60, fill of post-hole 61 in Barrack 2: 1 sherd of coarse pottery, 1 nail
- 62 and 110, fills of repair post-hole 63, Barrack 2: 7 sherds of coarse pottery, 12 sherds of amphora, daub
- 104, fill of repair post-hole 103, Barrack 2: 13 sherds of coarse pottery, including type 155, 7 sherds of amphora 1 nail, iron-rich concretion, 2 fragments of burnt animal bone, charcoal, daub
- 419 and 436, fill of construction trenches in Barrack 1: 1 sherd of coarse pottery type 170, 1 sherd of decorated samian (D21)
- 438, lower fill of pit 439, Barrack 1: charred cereal, mainly barley, and some weed seeds
- 454, fill of pit 455 cut by construction trench of Barrack 1: 5 sherds of coarse pottery, including type 181, 1 sherd of burnt, decorated samian (D23), 1 sherd of mortarium, 2 pieces of glass, 1 melon bead, 2 nails, 2 fragments of burnt animal bone, charcoal
- 605, fill of repair post-hole 604 western end of Barrack 1: 1 fragment of unidentifiable copper alloy, 9 sherds of coarse pottery, 5 nails, iron-rich concretion

662, fill of post-hole 661 western end of Barrack 1: charcoal fragments

682, fill of repair post-hole 680 in Barrack 1: 2 fragments of burnt animal bone, 1 nail

Demolition contexts

53 and 58, demolition fills of construction trench, west end wall Barrack 2: 15 sherds of coarse pottery, 9 sherds of amphora, 1 piece of bottle glass, 1 nail, 1 fragment of burnt animal bone, daub, heated lithic, much charcoal

402 and 430, fills of demolition pit 431, Barrack 1: 1 Republican coin (no. 3), iron rod (no. 145), 14 sherds of coarse pottery, including type 56, 4 sherds of mortarium, 2 sherds of amphora, base of glass unguent bottle, 3 fragments of burnt animal bone, 4 nails, much charcoal and daub, 3 flints

434, fill of demolition pit 435, Barrack 1: 5 sherds of coarse pottery, 1 sherd of decorated samian (D32), 1 fragment of burnt animal bone, 3 nails, daub, 1 flint, large quantities of carbonised cereals, mainly barley, with some wheat, oats and straw

440, fill of demolition pit 441, Barrack 1: some 20 sherds of coarse pottery including types 70 and 81, 2 sherds of samian, 1 decorated (D22), 2 pieces of bottle glass, 4 fragments of burnt animal bone, 5 nails, charcoal, daub, 2 flints, a few carbonised cereal fragments

616, upper demolition fill of pit 439, Barrack 1: 1 sherd of coarse pottery, 1 sherd of mortarium, 1 sherd of amphora, 1 piece of brick, daub, 1 nail, unidentified iron object

625 and 626, demolition spread mixed with collapsed walling 611 at the western end of Barrack 1: 10 sherds of coarse pottery, including type 60, 3 sherds of samian including 2 stamps (S7 and S8) and 1 decorated sherd (D35), 6 sherds of amphora, 1 piece of bottle glass, 3 nails, ceramic building material, much charcoal, 1 sherd of later Bronze Age/Iron Age pottery

630 and 632, fills of demolition pit 631, Barrack 1: 2 sherds of pottery, 2 sherds of amphora, 3 nails, cattle teeth, a few carbonised barley fragments

659, fill of demolition pit 677, Barrack 1: 1 sherd of mortarium, 1 piece of bottle glass, iron-rich concretion, 1 piece of flint

Post-demolition contexts

32 and 33, cobble spread over centre of Barrack 2: over 50 sherds of amphora, 1 sherd of coarse pottery, 1 piece of brick, 2 nails, charcoal, daub

5.2 BARRACKS 3 AND 4

5.2.1 DESCRIPTION

Barracks 3 and 4 were joined at the eastern end, the officers' quarters, to form a double barrack measuring overall 44.3m long by 22m wide externally (FIG. 5.4). The block was situated in the north-east corner of the fort, the eastern *praetentura*, behind the granaries and aligned east-west (*per scamna*). The subsoil in this area was predominantly sandy silt overlying clay and archaeological features were not always easy to see. Additionally, because the ground sloped quite markedly towards the north-east corner of the fort, the south and west parts of the building had suffered some plough erosion. Given these two factors, some of the flimsier partition slots may not have been recorded. By way of contrast, however, the north-east corner had been protected by silting and partly conserved by waterlogging, providing some of the best structural and stratigraphic evidence of any building on the site.

For the purposes of description the building may be divided into two parts: the accommodation for the men (*contubernia*) and the officers' quarters. For convenience the north wing of the block will continue to be referred to as Barrack 3, and the south wing as Barrack 4.

The men's accommodation in Barrack 3 measured *c.* 24.6m long by 8.4m wide externally. Initially most of the block appears to have been subdivided into pairs of equal-sized double rooms (*contubernia*) each approximately 3.4m by 4m internally, assuming that the first partition slot at the north-west end of the building was missed. However, two partition slots (1623 and 1629) on the south side adjacent to the officers' quarters were displaced from this regular system to define three rooms varying in width from 1.4m to 5.2m internally. Though these two

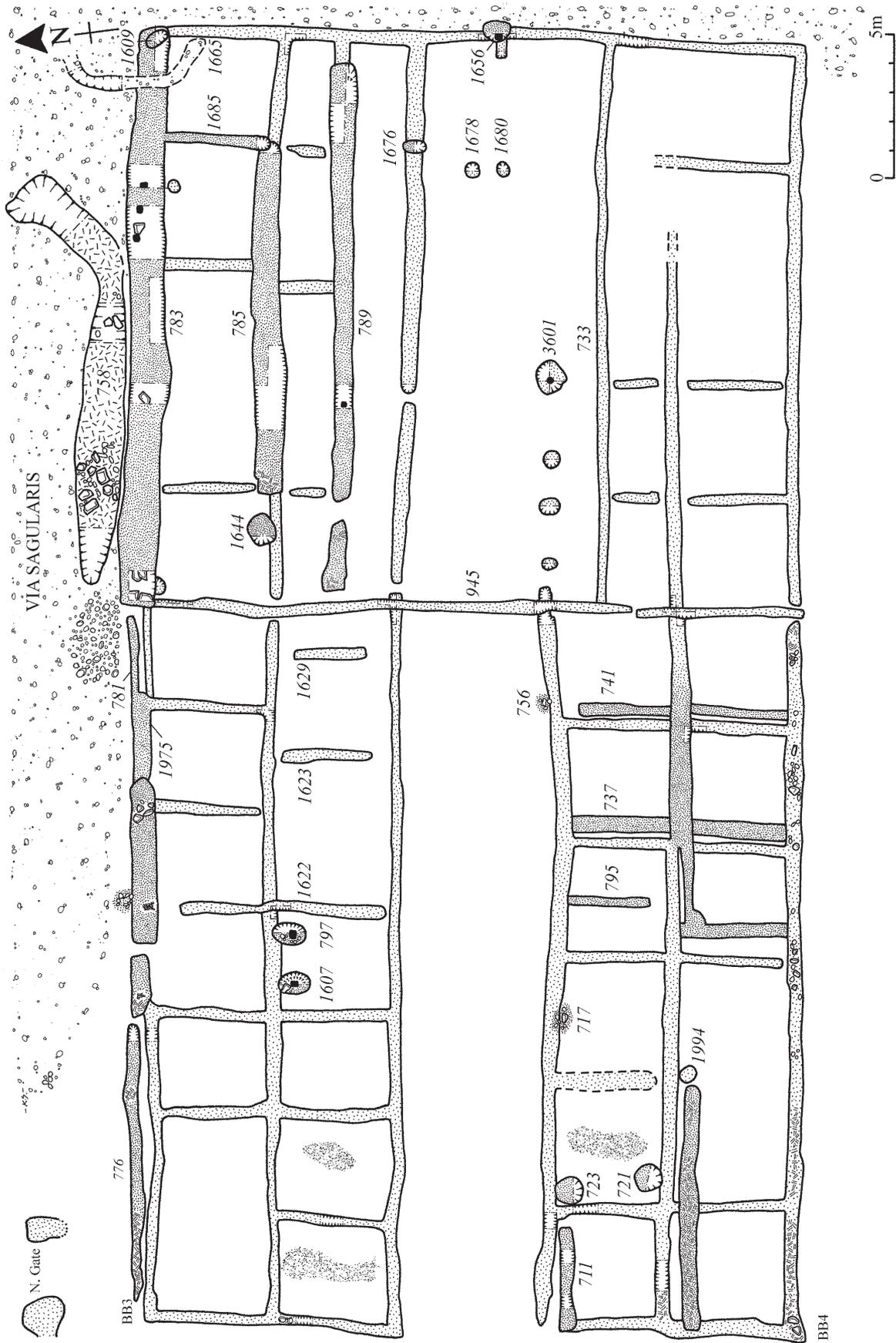


FIG. 5.4 Plan of Barracks 3 and 4

slots were not contiguous with any other walls, there is no reason to see them as secondary. One partition slot (1622), assumed to be primary on grounds of spacing, appeared to cut the central longitudinal wall trench. This may indicate that it is secondary, but is more likely simply to reflect the order in which the slots were dug and filled, for the western end wall slot (945) of the officers' quarters shows a different structural relationship with different main load-bearing wall slots (see below).

Barrack 4 lay some 5m to the south across what, on analogy with the road between Barracks 1 and 2, had probably been a metalled yard, though no trace of any prepared surface had survived. Barrack 4 was slightly more regular in the layout of its men's accommodation, but contained only six *contubernia*. As the overall dimensions of the men's quarters were similar to those of Barrack 3 (24.8m by 8.4m), each *contubernium* was slightly wider (3.9m). Only one partition slot was missing, though a possible post-hole (1994) may be all that remains of its line.

Traces of the amorphous orange/red staining commonly found in Barracks 1 and 2 were detected in both wings, though only two examples in Barrack 3 and one in Barrack 4. Two of the three cases were centrally located in one of the inner rooms of the *contubernia*, the third slightly off centre, as in Barracks 1 and 2. All three examples were located at the western end of the block where the subsoil was drier and more sandy. No other internal features were noted.

The officers' quarters measured 22.2m by 19.7m externally, the larger dimension running across the width of the building. They were divided from the men's accommodation by a wall trench (945) that ran the full width of the double block. It cut the inner main wall trenches of the men's quarters in both wings and the central longitudinal wall trench in Barrack 4, but the equivalent wall trench in Barrack 3 and the outer main wall trench in Barrack 4 clearly respected it, since they stopped short on either side, suggesting that it was primary. These apparent stratigraphic contradictions are presumably no more than the reflection of the order of construction of individual elements of the building. The matching wall trench at the eastern end of the block presented no such stratigraphic complications.

The subdivision of the officers' quarters was more complex and its interpretation further complicated by the extent to which it had been repaired in the north-east corner (below 5.2.4). Nonetheless, there was sufficient consistency of pattern to suggest that two suites of rooms were involved, rather than a single block, paralleling the two separate arms of accommodation provided for the men. Dealing first with the northern suite, the basic east-west lines of the men's quarters of Barrack 3 continued with the addition of a longitudinal construction trench (789). Though for most of its length it was clearly secondary, the wall line is assumed to have been part of the original layout because a small section of original wall trench survived, contiguous with the end wall of the block. These longitudinal trenches divided this part of the block into three ranges of rooms.

The outermost range was divided into four rooms. Though the most easterly partition wall was of secondary construction, it is assumed to have replaced a primary wall in the same position, as was evidently the case with most of the longitudinal walls. Three of the rooms were broadly equal in size to the outer rooms in the *contubernia*, while the fourth was approximately double the area, measuring 7.5m by 4m internally. The subdivision of the narrow (2.2m wide) central range mirrored that of the outer range, while the equally narrow inner range had no subdivisions and presumably served as an access corridor.

In broad outline the southern suite was similarly arranged. However, the main east-west lines of the men's quarters did not continue in quite the same way as those of Barrack 3. The central longitudinal trench did not appear to extend to the eastern end wall, though this probably simply reflects a failure to detect it. The alignment of the inner longitudinal trench was continued by a line of four post-holes, but only for 7.8m. The end post-hole (3601), which contained a post-impresion exactly in line with one of the internal partitions, was much larger than the other three, suggesting that it may have been the terminal post. As with the northern suite, a fourth longitudinal wall trench (733) had been added to create a narrow (2.3m wide) inner range of rooms, with a standard (4m wide) outer range outside it. Three partitions in the outer range were detected creating three almost square rooms, equivalent to the *papiliones* in the

men's quarters, and a larger room (7.5m long), an arrangement like the northern suite though with the relative position of the larger room reversed.

Between the two suites was a large L-shaped room running the full width of the block ranging from 4.2m to 6.4m in width, the smaller dimension corresponding with the position of the post-defined corridor which ran slightly less than half the length of the southern suite. Two post-holes (1678 and 1680) and a stub of trench projecting from the east end wall of the block point to the subdivision of an area c. 4.5m by 2.9m in the north-east corner of this large room.

5.2.2 INTERPRETATION AND ANALOGIES

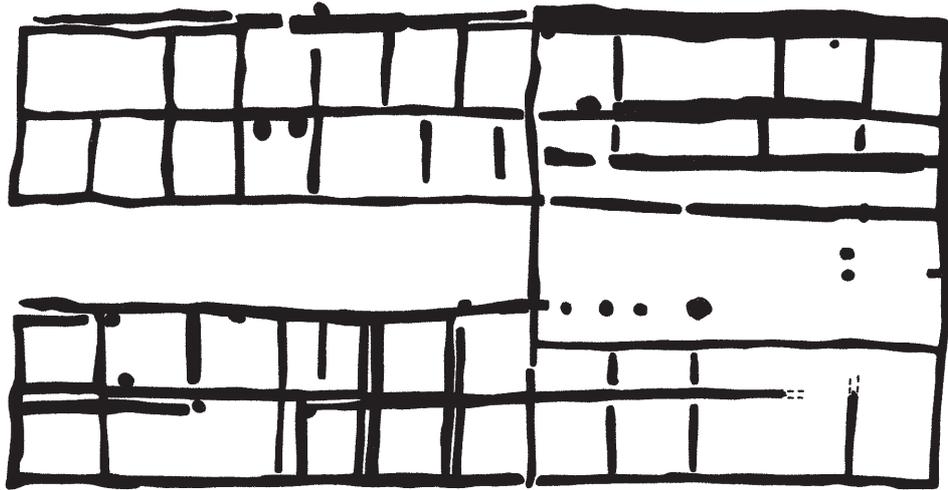
Although not of such standard form as Barracks 1 and 2, the identification of buildings 3 and 4 as barracks or, more probably, as combining to make a double barrack, is indicated both by their location within the fort and their general morphology, particularly the subdivision between officers' and men's quarters. The identification of the latter is consistent with others in the fort in terms of both the size and shape of individual *contubernia*. However, if the interpretation of the amorphous orange-red stains attested in three of them is correct (above 5.1.2), this would again indicate the presence of horses and suggest that this double block should also be interpreted as a combined stable-barrack for cavalry. Since the *contubernia* are of comparable size to those in Barracks 1 and 2, the same disposition of horses and men per *contubernium* is assumed.

Direct parallels for the building cannot readily be identified. The principle of joining two barracks together is attested, but more usually relates to two blocks back to back, as in the period 2/3 barracks in the right *retentura* at Valkenburg (Glasbergen and Groenman-van Waateringe 1974, 13–15; FIG. 5.5b). If, on the other hand, the block is split into its two constituent parts, similar barracks with large officers' quarters and a reduced number of *contubernia* are occasionally attested, such as building I, and to a lesser extent building IX, in the contemporary Flavian fort at Strageath (Frere and Wilkes 1989, 59, 88–9, 119–20, figs 33 and 51; FIG. 5.5c and d), though it should be stressed that the plans of both these buildings are heavily restored on the basis of limited excavation. Interestingly, the second of these broadly analogous barrack blocks was interpreted by its excavators as housing cavalry, though not in conjunction with their horses, though the first was seen as indicative of a legionary presence (but see below 12.3).

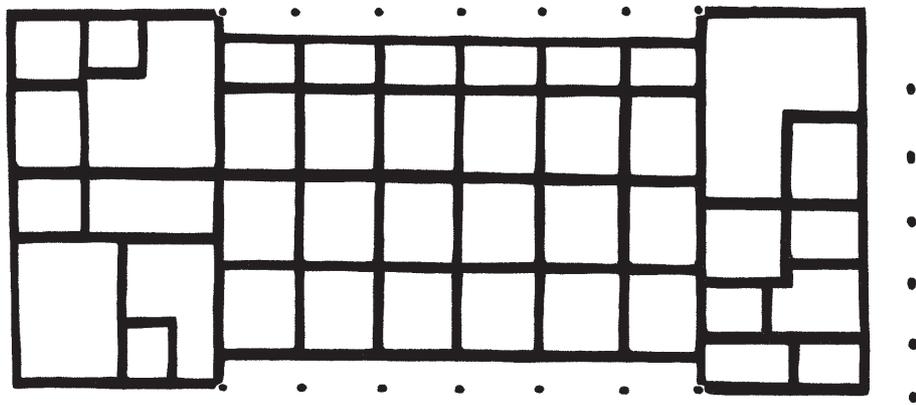
This block is markedly different too from the other barracks within the fort at Elginhaugh, not merely because it is double, but because of the much increased size of the officers' quarters, taking up some 43% of the total length of the block, and the concomitant reduction in the number of *contubernia*. All other barracks in the fort have ten *contubernia*, at least in their primary phase, whereas Barracks 3 and 4 have only seven and six respectively. However, application of the same formula for the number of men and horse per *contubernia* (Hodgson and Bidwell 2004, 133–5) gives totals of only 18 and 21 cavalymen respectively, or 39 if the two blocks were intended to function as one unit. These figures do not fit any sensible combination of *turmae*, but neither would they accommodate any logical proportion of an infantry century, assuming the standard eight men per *contubernium*. Given the large size of the officers' quarters, nearly two-thirds the area of the *praetorium* and more than five times that of the officers' quarters in Barracks 1 and 2, it is reasonable to assume that the occupant or occupants were of considerable rank, though interestingly the concentration of associated material culture is no greater than other barracks within the fort, and in terms of the distribution of samian is markedly less (below 10.4). Nonetheless, the morphological evidence raises the possibility that this double barrack accommodated a *turma* from a cavalry *ala* rather than from a *cohors equitata*, since the former were of higher status (see 12.2 below).

5.2.3 CONSTRUCTION AND RECONSTRUCTION

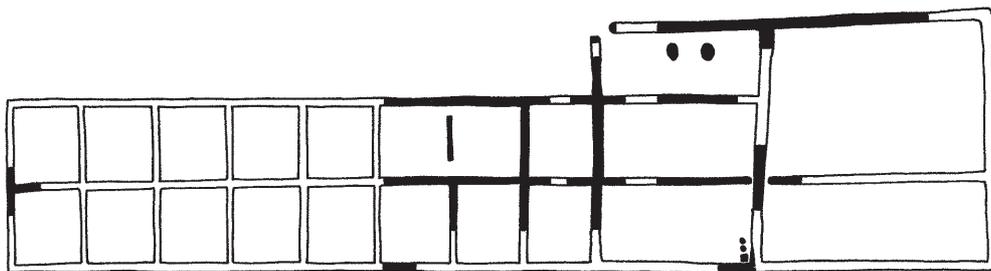
With the exception of the inner wall of the southern suite within the officers' quarters, which was founded on individual post-holes, post-trench construction was used throughout Barracks



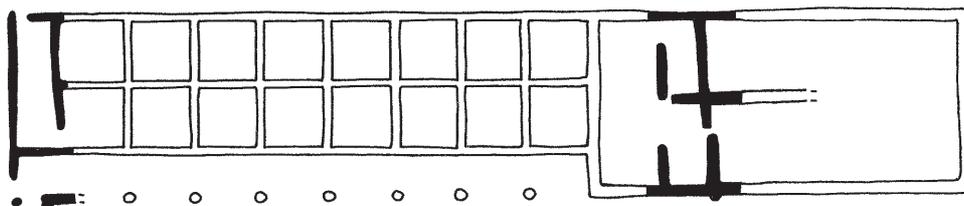
a) ELGINHAUGH 3 & 4



b) VALKENBURG 7 & 8



c) STRAGEATH 1



d) STRAGEATH 9

0 20m

FIG 5.5 Comparative barrack plans: a. Elginhaugh (3–4); b. Valkenburg (7 and 8); c. Strageath 1; d. Strageath 9

3 and 4, as it was elsewhere in the fort. Nonetheless, Barracks 3 and 4 provided some of the most interesting structural detail, particularly in relation to the phasing of the construction process and the methodology of repair.

Though in general the layout of the construction trenches of the buildings in the fort lacks the regularity normally, though perhaps mistakenly, assumed to be characteristic of military structures (below 12.3), those in Barracks 3 and 4 were the most aberrant. It would have been difficult to run a straight wall line through most of the main longitudinal construction trenches, a situation particularly evident in the north wall of Barrack 4. Unlike most other buildings within the fort, the construction trenches were frequently discontinuous, not merely in the partition walls, but also in the main longitudinal walls. Also unusual is the evidence of phasing of elements of the primary construction. This was particularly noticeable in one of the partition trenches (1622) in Barrack 3. This cut the median longitudinal trench, which must, therefore, already have been backfilled. Similarly the cross-wall (945) which marked the western end of the officers' quarters cut three of the main longitudinal wall trenches, two in Barrack 4 and one in Barrack 3, but was respected by two others, which stopped short on either side of it. On the assumption that the trenches were backfilled as soon as the individual posts were placed within them in order to secure the main uprights in position (below 12.3), these relationships would suggest a rather piecemeal approach to the construction process. Indeed, there is almost a sense of indiscipline about the construction not evident elsewhere in the fort.

As with other barracks, the primary construction trenches for the main longitudinal and end walls tended to be larger than the partition wall slots. With one exception, a short stretch of the north wall of Barrack 3, the main wall trenches ranged from 0.35m to 0.55m wide and from 0.15m to 0.38m deep. In contrast, the partition wall trenches were between 0.27m to 0.38m wide and 0.11m to 0.17m deep. Given some of the very shallow depth figures, it is worth re-emphasising that they have been reduced both by the methodology of excavation and by plough truncation, particularly at the western end of the block. For the most part these primary construction trenches were filled with silty sand, though some of the trenches at the western end of Barrack 4 contained a higher proportion of clay and stones.

In general the repair trenches were wider and deeper, up to 1.25m wide and 0.7m deep in the case of the main north wall (783) of the officers' quarters of Barrack 3. They were often distinguished by their fill, usually having a higher clay content. This may partly reflect the infilling of the trenches with collapsed daub debris from the primary walls, though it probably derives in the main from the higher clay content of the underlying subsoil in that area. Debris from earlier walls was certainly deposited in the repair trenches, for the filling of 783 included a discarded structural post and pieces of wattling (below 5.2.4) (FIG. 5.6; PLATE 5.2).

TABLE 5.2: DIMENSIONS OF POSTS IN BARRACKS 3 AND 4

Context	Dimensions (m)	Condition
789	0.14 x 0.12	impression
797	0.23 x 0.23	impression
1607	0.22 x 0.22	impression
1656	0.17 x 0.17	impression
1664 BG (within 783)	0.14 x 0.07	extant but discarded*
1664 BG (within 783)	0.15 x 0.14	extant but discarded*
1664 AI (within 783)	0.14 x 0.1	extant*
1664 BI (within 783)	0.12 x 0.09	extant*
1664 BJ (within 783)	0.17 x 0.1	extant, flat-bottomed, re-used*
3601	0.25 diameter	impression

*For fuller discussion of these extant examples see 10.9.1 below.

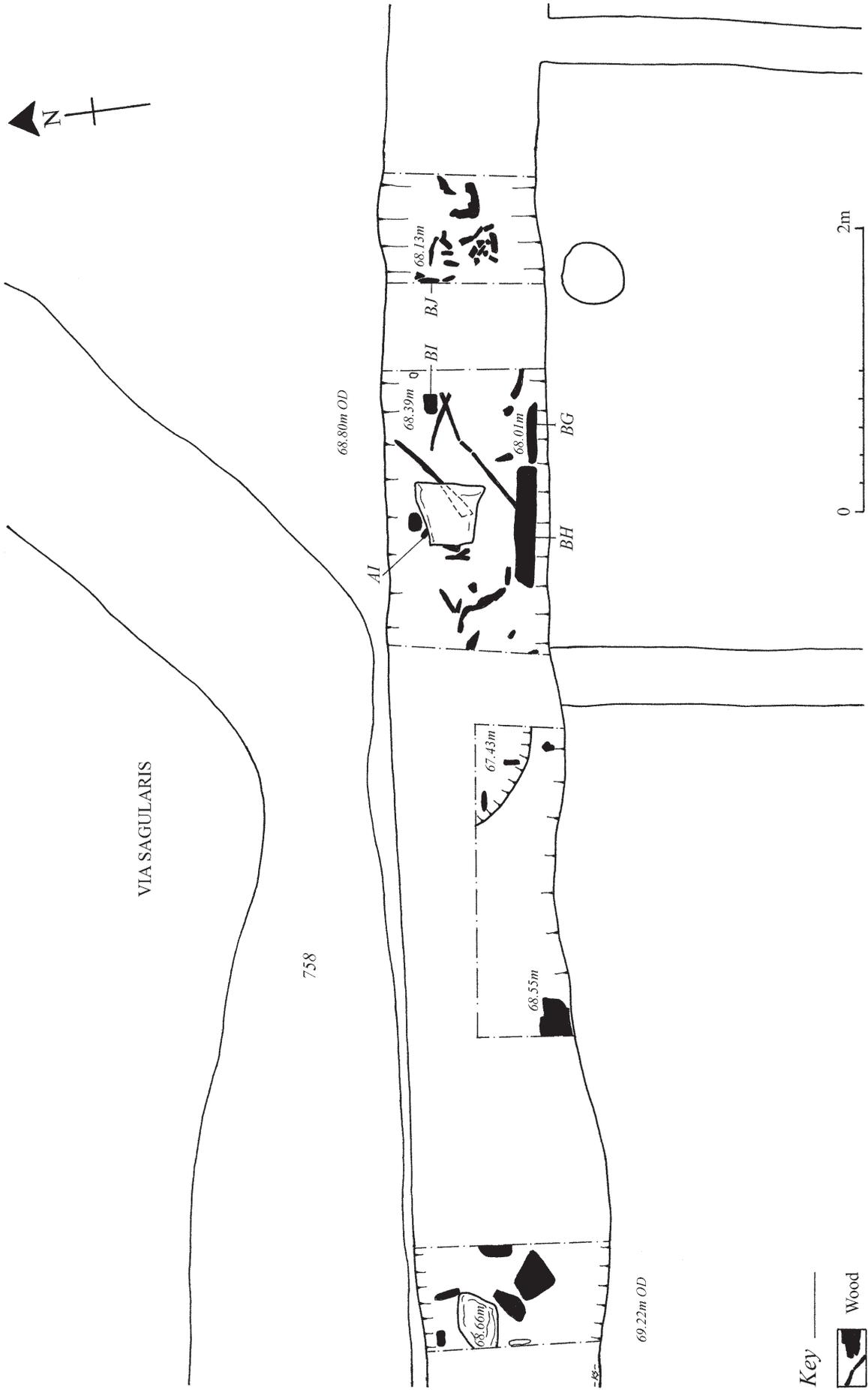


FIG. 5.6 Detailed plan of repair trench 783, Barrack 3



PLATE 5.2 Repair trench 783, Barrack 3; view west

A number of post-impressions and extant posts were preserved (below 10.9.1), confirming that the construction method employed involved ground-fast posts, though they derived almost entirely from repair contexts. With the exception of one post-impression in primary post-hole 3601 in Barrack 4, all post-impressions and extant posts were approximately rectangular with dimensions ranging from 0.7m to 0.23m by 0.12m to 0.23m (TABLE 5.2). Two posts (1664 BG and BH) were discarded in the massive repair trench (783) in Barrack 3 (FIG. 5.6; below 10.9.1), and derived, therefore, either from the primary construction or more probably from an earlier repair. The better-preserved examples from the same context indicated that the ends of the posts had been sharpened to a wedge, presumably to facilitate driving them deeper into the subsoil. On the other hand, one post had a flat base and several flat stones were recorded at the bottom of trench 783, particularly at its western end, which seem likely to have served as post-pads. Where three posts were recorded in a line, the spacing between them, centre-to-centre, was 0.9m.

The only evidence for the infilling of the walls comes from the fill of the repair trench 783 (FIG. 5.6). The presence of fragments of wattling (below 11.3) and quantities of clay would seem to confirm the use of wattle and daub construction.

As with Barracks 1 and 2, there is nothing to suggest other than a single-storey structure. The differential post-trench depth between the longitudinal walls and the lateral partitions would seem to indicate that only the former were load-bearing. The method of roofing, however, is

less straightforward than other barracks given the peculiar morphology of the building. The most likely roof structure for the men's accommodation would involve two separate, simple, low-pitched roofs, the ridge in each case being supported by the central longitudinal wall. These roof lines may have continued into the officers' quarters, the 5m gap between them being infilled by a separate single roof, perhaps tied at the wall plate in the absence of a ridge support. Alternatively, since one of the main load-bearing wall lines involved was incomplete and represented only by post-holes, the whole of the officers' quarters may have been roofed separately as a single unit. This might serve to explain the introduction of the additional longitudinal construction trenches (733 and 789) in order to provide necessary support for the rafters, in the manner of an aisled building. For comments on roofing material see 5.1.3 above. There is insufficient evidence to comment on the position of doorways.

5.2.4 STRATIGRAPHY AND PHASING

Like a number of others, Barracks 3 and 4 showed slight signs of a second phase of use, though this was difficult to disentangle from the abundant evidence of extensive repairs. A subsidiary partition slot (795) through the centre of the *arma* towards the middle of the men's quarters in Barrack 4 may hint at a remodelling of the interior, particularly if it is taken in conjunction with a similar slot on a slightly different alignment in the *papilio* and secondary slots (737 and 741) in the next two *contubernia* to the east. This may have been intended to bring the accommodation provided in line with Barrack 3, which had one more *contubernium*. On the other hand, these secondary slots may simply have been repairs as they were immediately adjacent to primary subdivisions, and the adjacent part of the central longitudinal wall had also been replaced.

A problem with the interpretation of these slots is their stratigraphic relationship with the main longitudinal wall trenches. All but one of the examples discussed so far appear, on the basis of surface indications, to be cut by primary outer wall trenches, though none of the relationships were checked by excavation. However, it is difficult to accept that these slots represent all that remains of an even earlier phase since that would require either that the block had been considerably smaller, or that any other contemporary wall trenches had been totally obliterated by the later phase, currently interpreted as primary, following exactly the same alignment. It is simpler to assume that the slots are secondary inserts that abutted the outer main walls without disturbing their construction trenches.

Of all the buildings in the fort, Barracks 3 and 4 had undergone by far the most extensive series of repairs. Most of the main longitudinal walls had been subject to some repair, while the northern wall of Barrack 3 had been replaced in its entirety, though not necessarily all at the same time. For some 9.7m from its western end a slightly irregular construction trench (776) ran parallel and immediately adjacent to the primary wall trench. After a brief interruption the line was continued by a short slot some 50% wider than the norm, which cut away the original trench. Beyond that, after another short break, was an even wider trench (0.85m) some 5.8m long which again had removed all trace of the primary wall trench and also cut an earlier secondary local widening of it (1975). The latter continued for some 2.9m at which point the repair reverted to a replacement trench (781) immediately outside the primary wall.

Finally, along the full length of the officers' quarters the original north wall had been removed by a massive trench (783) up to 1.4m wide and 0.7m deep. Sections through this construction trench revealed surviving waterlogged timber uprights, both in situ and discarded (below 10.9.1), numerous other discarded offcuts and pieces of wattle (below 11.3.2), and a number of flat stone post-pads (above 5.2.3). This discovery confirmed that the problem had been structural failure caused by rot, resulting from the combination of a poorly draining clay/silt subsoil and, as was clear whenever it rained during the excavation, the fact that much of the northern half of the fort drained down into this low-lying area. This phase of repair seems the most likely context for the digging through the *via sagularis* of a large drainage gully (758), averaging 0.3m in depth, which runs parallel to and clearly respects the construction trench (783) for over half its length before turning to the north-east. The gully drained from

west to east, increasing in depth as it did so, and was presumably intended to drain water away from the adjacent barrack wall.

That this drastic repair occurred at a relatively late stage in the sequence of work is suggested by the fact that the first partition wall slot (1685) in the officers' quarters, inserted or more probably replaced at the same time, cut the repair trench of the next longitudinal wall to the south (785). Even so it was not the final stage of repair, for the post at the north-east corner of the block was subsequently replaced, a separate post-hole (1669) cutting through the repair trench. Probably contemporary with this was an adjacent shallow gully (1665), some 0.15m deep and 0.5m wide, which originated against the inside of the end wall of the block and curved away to the north, cutting across the major repair trench (783) for the outer wall. This seems best interpreted as a further attempt to improve the drainage away from, or rather out of the building in this corner, the slot presumably being cut through the base of the upstanding outer wall.

Within the officers' quarters a slightly less substantial construction trench (785) up to 0.95m wide and 0.45m deep had replaced most of the central portion of the next longitudinal trench to the south. The repair was continued to the west by a post-hole (1644) which cut away part of the primary trench. Similarly, two post-holes 1.4m apart (797 and 1607), which cut this central trench, provided additional support in the central *contubernium* of the men's quarters. It was noticeable that these repair features tended to contain more artefacts than the primary construction trenches (below 5.2.5).

Most of the additional longitudinal trench in the officers' quarters had been replaced by a wider trench (789). Only the eastern stub of the primary construction trench survived at its T-junction with the end wall of the block. Because of its width and irregular form, the short detached stretch of this wall trench at the western end is also assumed to be secondary. By way of contrast, only a single small post-hole (1676) impinged upon the inner wall line. Nearby another post-hole (1656) cut through the end wall of the block at its mid-point.

The repairs to Barrack 4 were less extensive and confined to the area of the men's accommodation. The western end of the northern main longitudinal wall trench, which splayed slightly outwards at this point, was replaced on the inside by a short slot (711) not quite running across the width of the first *contubernium*. Its line was continued by a single post-hole (723) in the north-west corner of the second *contubernium*, and a stone setting (717) for a post on the inner edge of the original wall trench in the centre of the next *contubernium* to the east. A similar setting (756), this time on the outside of the trench, was located opposite the last secondary partition before the west wall of the officers' quarters.

The median longitudinal wall trench was similarly replaced across the width of the first two *contubernia* by a parallel slot located immediately to its south (703). An additional single post-hole (721) on the north side may be associated. The alignment of 703 was picked up further along the barrack by a secondary wall-trench which gradually merged into the primary trench, widening it in the process. Three of the *contubernia* partition walls in this area had also been replaced, two of which may represent either repair or remodelling (above).

Though subsequent use of the area makes clear that Barracks 3 and 4 were demolished, traces of this process were limited (FIG. 5.7). One of the surviving posts in repair trench 783 (below 10.9) appeared to have been sawn off. Two small demolition pits (707 and 1992), filled with burnt daub, were noted at the western end of Barrack 4, one of which cut through a partition wall slot. A further demolition pit (3626) cut the repair trench of the median wall in the officers' quarters of Barrack 3. It seems likely that the western end of the large drainage gully (758) outside the north wall of Barrack 3 was also deliberately backfilled at this time as it contained burnt daub, nail fragments and quantities of charcoal. In addition over 220 pieces of brick or tile were recovered (below 10.9.3), presumably derived from the hypocaust in the bath building situated outside the fort to the south. These may have been intended to provide some securer footing for subsequent activities in the area.

After the building had been demolished, continued use of the area is indicated by a number of features (FIG. 5.7). A shallow U-shaped gully (761) only 0.08m deep ran from the well (1238), located between Barrack 4 and Granary 2, across the site of the officers' quarters of

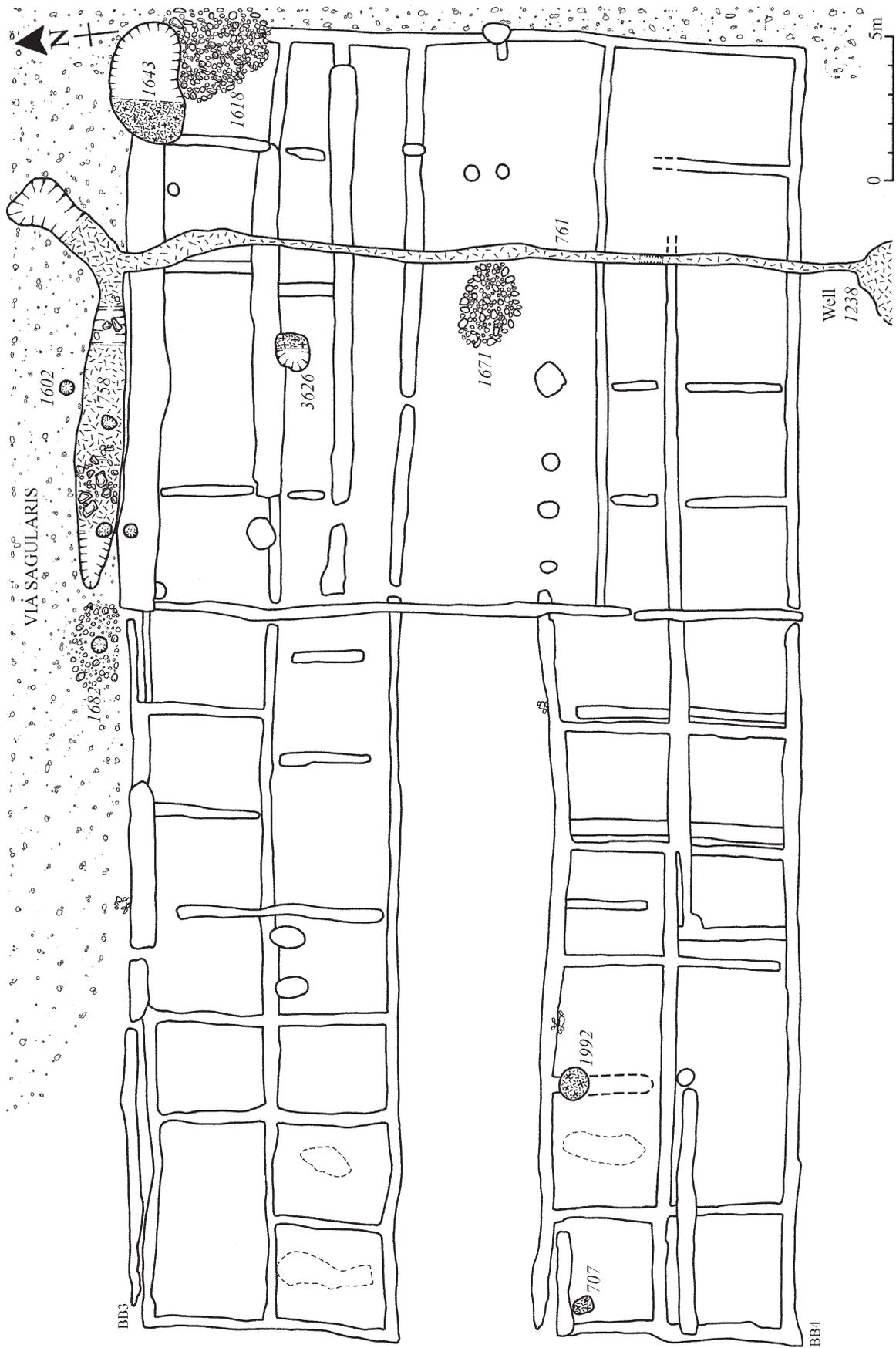


FIG. 5.7 Plan of Barracks 3 and 4: post-building and demolition phases

Barracks 3 and 4. This presumably served to channel any overflow from the well and prevent the ground around it from becoming waterlogged. This shallow drain joined the eastern end of the large drainage gully (758) to the north of Barrack 3 at the point where it turned towards the north-east. The two features appeared on the surface to be contemporary and the relationship was not tested. It is suggested above, however, that the western end of the larger gully (758) had already been backfilled, for it is cut by two of a close group of five shallow post-holes. That they relate to this phase of activity is confirmed by the fact that they were sealed beneath a layer of secondary demolition material (760) (see below). Two of these post-holes cut the *via sagularis*, in one case through a patch of secondary metalling (1682), and the fifth cut through the repair trench (783) of the north wall of Barrack 3. A sixth cut through the *via sagularis* at the north-west corner of the *fabrica* (below 5.3.1). The post-holes were relatively insubstantial: though they varied from 0.3m to 0.54m in diameter, they were only 0.05m to 0.14m deep. One (1602) contained some carbonised cereals in its fill. Their insubstantial nature and the fact that they did not form a coherent pattern, other than being broadly in line, makes it unlikely that they supported any major structure. Some form of fence or perhaps a hitching rail are possibilities (see also 5.3.4). Finally, the north-east corner of Barrack 3 was sealed by a cobbled surface (1618) composed of tightly packed medium-sized cobbles with gravel and small pebbles between the larger stones. This cobbling was particularly reminiscent of that noted at the junction of the *via sagularis* and the *via principalis* adjacent to Granary 1 and fits into the pattern of scattered areas of secondary hard-standing across much of the fort (below 12.1). A further area of cobbling (1671), some 2.5m by 2m, was centrally located in the officers' quarters. Though isolated stratigraphically, it seems most likely to relate to this phase.

The next phase of activity is, however, rather unusual, for there is evidence of a second phase of demolition. A large but shallow pit (1643), only 0.2m deep, cut away part of the secondary cobbling (1618) in the north-east corner of the fort (FIG. 5.7). It contained quantities of burnt daub mixed with charcoal (below 10.11). This in turn was sealed by a general demolition layer of burnt daub, with large quantities of artefacts (760) (below 5.2.5), which spread across the eastern end of the already demolished barrack block, increasing in depth towards the north-east corner of the fort. Such material could only have derived from the demolition of a building and lends support to the view that the *fabrica* had continued in use after the rest of the fort had been demolished (below 5.3)

5.2.5 ASSOCIATED FINDS

Construction contexts

702, 705 and 1605, fill of construction trenches in Barrack 4: 7 sherds of coarse pottery, 1 sherd of amphora, 1 sherd of mortarium, 1 piece of brick, daub, iron concretion

Repair contexts

767, fill of post-hole 797, Barrack 3: large fragment of glass bottle, daub

766, fill of post-hole 1607, Barrack 3: 15 sherds of coarse pottery, 1 sherd of amphora, several sherds of mortarium, 2 nails

720, fill of post-hole 721: 1 sherd of coarse pottery, 2 nails

722, fill of post-hole 723: 2 sherds of coarse pottery

784, 1664 and 1655, fills of repair trench 783 in the north-east corner of Barrack 3: structural timbers and offcuts (see below 10.9.1 and 11.3.2), 1 piece of flint

1666, fill of gully 1665 in north-east corner of Barrack 3: 3 sherds of coarse pottery, including type 58

1677, fill of post-hole 1676 east end of Barrack 3: 1 sherd of coarse pottery, 1 sherd of amphora, 1 piece of ceramic building material

Demolition and post-fort contexts

762, fill of overflow channel from well 1238: 1 sherd of coarse pottery, 2 pieces of brick

- 760, secondary demolition spread, north-east corner of Barrack 3: disc-headed copper-alloy stud (no. 37), over 20 sherds of coarse pottery, including types 171 and 191, 1 sherd of amphora, 1 nail
- 706, fill of pit 707: 4 pieces of bottle glass, 1 nail
- 757 and 759, fills of drainage gully 758: 2 fragments of unidentifiable copper alloy, 1 fragment unidentifiable lead, 15 sherds of coarse pottery, including types 9 and 142, 4 sherds of amphora, 2 sherds of mortarium, 3 fragments of bottle glass (one conjoins with fragment from make-up of *via sagularis* (765) at north-east corner), over 220 pieces of brick, possible pivot stone, 3 nails, much charcoal, daub
- 1603, fill of post-hole 1602 north of Barrack 3: carbonised barley and indeterminate cereal grains
- 1615, fill of pit 1643 in north-east corner: over 20 sherds of coarse pottery, including type 140, 6 sherds of amphora, 3 sherds of plain samian, 1 piece of bottle glass, 2 hobnails, daub
- 1671, cobble layer in centre of block: 1 piece of brick, 1 piece of flint, daub

5.3 *FABRICA* (WORKSHOP)

5.3.1 DESCRIPTION

The *fabrica* was a simple rectangular structure measuring 32.2m by 4.2m externally (FIG. 5.8). Its long and narrow shape was dictated by the space available, for it was situated in the north-east corner of the fort, set into the rear of the rampart opposite the end wall of Barracks 3 and 4 (PLATE 5.3). Although the rampart had been cut back by 2.7m to accommodate it, the building still projected out into the *via sagularis* reducing the width of that road at the narrowest point to 2.3m.



PLATE 5.3 *Fabrica*; view south

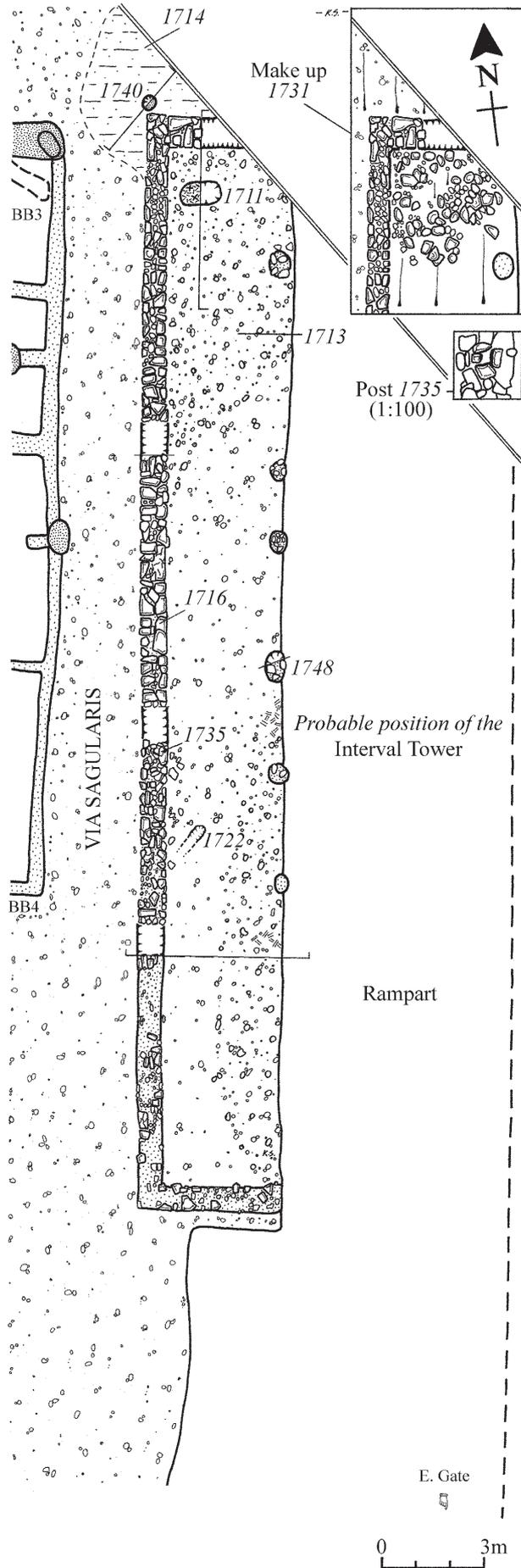


FIG. 5.8 Plan of *fabrica* and east perimeter (north)



PLATE 5.4 North-west corner of stone wall footing of *fabrica*; view south-east

The building was defined on three sides by stone footings that survived to a maximum height of 0.5m (PLATE 5.4) at the northern end, where they had been protected by the build-up of silts which had accumulated in this corner of the fort as a result of the natural drainage pattern. The southern end had, however, been considerably truncated by ploughing. The rampart of the fort formed the east side of the building, the roof supported by a line of six apparently irregularly spaced post-settings. These proved difficult to detect and so there is good reason to believe that some may have been missed, particularly at the southern end. An average spacing of *c.* 3m would fit both the surviving examples and the gaps.

The building was provided with a gravel and cobble floor, well preserved at the northern end but surviving rather patchily elsewhere. Extensive areas of burning were recorded, penetrating through the full depth of the floor in places. This would seem to indicate the effects of consistent and long-term heating rather than be the result of a single demolition event. There were, however, no internal features certainly contemporary with the building. A small oval pit (1711) at the northern end may have been so, but it was completely filled with demolition material, predominantly charcoal (below 5.3.4). Similarly, a very shallow linear feature (1722) of indeterminate length located towards the centre of the building contained neither finds nor other distinguishing characteristics.

No evidence survived to indicate the location of the entrance to the building. While this is commonplace for timber buildings, where the absence of a break in the construction slots is simply overcome by the appropriate spacing of the posts set within them, the continuation of a stone wall-footing would clearly be a hindrance to access. Presumably a sill of some kind was provided, though there were no obvious candidates. However, the poor preservation of the wall footing at the southern end of the building may have removed any trace. Alternatively, access may have been gained from the north-east corner, the one part of the building not exposed.

5.3.2 INTERPRETATION AND ANALOGIES

This building is unique within Flavian auxiliary forts in Britain. In this period the use of stone for building within auxiliary forts is confined exclusively to bathhouses, though these are located, as at Elginhaugh, outside the fort (below 9.2). Moreover, structures built into or against the rear of the rampart are extremely rare in first-century auxiliary forts. One was noted at Hod Hill, set lengthways at the rear of the rampart to the west of the South Gate, though it was of timber construction (Richmond 1968, 88). A rectangular building 11.6m long by 4.3m wide, it was interpreted as a cookhouse, though no traces of cooking ovens were found within it. It was, however, associated with intensive burning. Short stretches of wall trenches were recorded at two points around the perimeter of the fort at Pen Llystyn (Hogg 1968, 122), but they formed no coherent structures. The only other analogy is from Elginhaugh itself, for a small lean-to timber shed, subsequently replaced in stone, was located at the rear of the rampart to the north of the West Gate, apparently linked to the manufacture or repair of copper-alloy artefacts (below 7.5). This structure, however, was much more ephemeral.

Stone buildings in similar locations are, however, relatively common in the Antonine period and later. Thus at Strageath a simple rectangular building measuring 24.3m by 6.5m, interpreted as a bathhouse, had been inserted into the rear of the rampart in the left *retentura* (Frere and Wilkes 1989, 98–102); while at Bar Hill (Robertson *et al.* 1975, 20–2) and Balmuildy (Miller 1922, 41–7) similar long rectangular structures, more readily identified as bath-buildings, were located at the rear of the rampart in the *praetentura*.

The best structural parallels, though of later date, would suggest interpretation of the building as a bathhouse, but the absence of any of the distinctive features of such a structure and the presence of a bath-building outside the fort militate against such an identification. When stone first begins to be employed within Roman forts, it is used for one of three reasons: to provide additional strength or stability; to give added prestige or status; or to improve fire resistance (Hanson forthcoming). The function of the buildings and the nature of the other activities that are attested around the internal perimeter of forts have one thing in common: the use of fire. Thus the main activities attested elsewhere at Elginhaugh between the *via sagularis* and the rampart are cooking and metalworking (below 7.5), as they are at other Flavian forts such as Pen Llystyn (Hogg 1968, 120–4). But given the absence of any identifiable cooking-oven, particularly in the light of their relative abundance elsewhere in the fort, and doubts concerning the likelihood of the provision of some central cooking facility within auxiliary forts, the second alternative is preferred.

The major problem with this proposed identification of the building as a *fabrica* (workshop) is the absence of any direct evidence of metalworking; all the more so when this is clearly attested both in the *principia* and in the *intervallum* area to the north of the West Gate (above 4.1 and below 7.5). Both of the above examples, however, relate to the working of copper alloy on a small scale. There is no evidence anywhere within the fort of ironworking, but given the range and importance of iron artefacts used by the military, from weaponry and tools to nails, the ability at least to repair such items, and probably to manufacture some of them, would seem to be an essential requirement in all forts. This is not to suggest that iron smelting would have taken place, though occasionally this is attested, as for example in the legionary fortress at Inchtuthil (Pitts and St Joseph 1985, 300–1), but rather that we should normally expect to find the equivalent of a smithy. Such activity might be recognised by the identification of a smith's hearth (Manning 1976b, 143–4) or the recovery of hammer scale. The former is likely to be a raised structure to facilitate ease of working the heated metal, as was suggested as the likely identification of two raised platforms of cobble, brick and tile in the workshop at Red House, Corbridge (Hanson *et al.* 1979, 30). At Elginhaugh, however, unless such a structure had been located at the northern end of the *fabrica*, any remains are likely to have been ploughed away. Similarly, hammer scale will survive only if the conditions are suitable. But the generally poor state of the iron objects recovered from the site (below 10.5) suggests that at Elginhaugh they were not. Even though no hammer scale was recovered from any of the levels associated with the *fabrica*, the better preserved deposits at its northern end were

clearly iron-rich, for the surviving metallurgy sealed beneath them had been stained orange-brown, presumably as a result of the high concentration of iron oxide in the water leaching through.

Because of the potential fire risk to the timber buildings in the fort, it seems surprising that the *fabrica* was not located within the annexe. But even a low stone footing would have ensured that hammer scale or other heated debris would have been confined largely to the interior of the building.

5.3.3 CONSTRUCTION AND RECONSTRUCTION

As already noted, the *fabrica* was the only stone building within the fort, though it should more correctly be referred to as of half-timbered construction. The absence of a more widespread scattering of stone in the vicinity, the discovery of a possible post-setting (1735) at one point in the middle of the wall, and the spread of burnt daub and charcoal preserved across much of the building, all indicate that the superstructure had been of timber. The original height of the stone wall footing is uncertain. It survives to a maximum of 0.5m (PLATE 5.4) at the northern end of the building, though since the interior seems to have been levelled up with sandy clay (1738) and cobbles (1731) (FIG. 5.9d) to counteract the sloping ground there, this need not necessarily imply a minimum wall-height for the building as a whole.

The wall was made of sandstone slabs (1716) up to 0.7m long forming both inner and outer facing, with smaller stones for packing and within the wall core. The stones had been lightly mortared together, for there were traces of mortar in the soil matrix between them, and set within a flat-bottomed construction trench 0.72–0.82m wide and 0.31–0.45m deep to the surviving floor level (FIG. 5.9c, d and e). The width of the wall reflected that of its construction trench (1724). The one possible post-setting within the wall (1735) did not penetrate below a single layer of stones in what remained of the wall and defined a post up to 0.08m by 0.18m in cross-section.

The post-settings, which supported the roof and revetted the rear of the rampart to form the east side of the building, did not become apparent until after the floor level had been removed. Most were defined only as clusters of stone packing associated with a very thin spread of sandy silt fill. Only one (1748) had been dug to any depth (0.27m) (FIG. 5.9a); most just clipped the back of the rampart.

The *fabrica* is unlikely to have been more than one storey high, though for functional reasons it may have had a roof height above the minimum appropriate for barrack blocks. Similarly, if smithing was taking place within the building, the superstructure may not have been completely enclosed in order both to improve the general ventilation and increase the supply of oxygen to the fire. However, the presence of burnt daub in the plough-disturbed demolition spread (1701), which sealed the interior, indicates that above the stone footings much of the west wall would have been filled with wattle and daub. A lean-to roof sloping away from the rampart would seem the most sensible arrangement for the purposes of drainage. The nature of the roofing material is uncertain.

5.3.4 STRATIGRAPHY AND PHASING

There was nothing to indicate more than one structural phase in the *fabrica*. However, it is worth noting that some pottery and other artefacts were recovered from one of the make-up layers (1738) (FIG. 5.9d) beneath the floor at the northern end of the building and from the sealed topsoil (1717) beneath the floor at the opposite end (FIG. 5.9e), indicating that rubbish deposits were already accumulating when the floor was inserted. However, the building itself was clearly primary, for the surface of the *intervallum* road (1721) sealed the construction trench for the west wall (FIG. 5.9c).

Evidence of demolition was limited to a spread of charcoal, burnt daub and clay containing quantities of artefacts and carbonised cereals (1701). This was confined to the internal area of the building, but was widespread across its length, concentrating in the western half nearest to

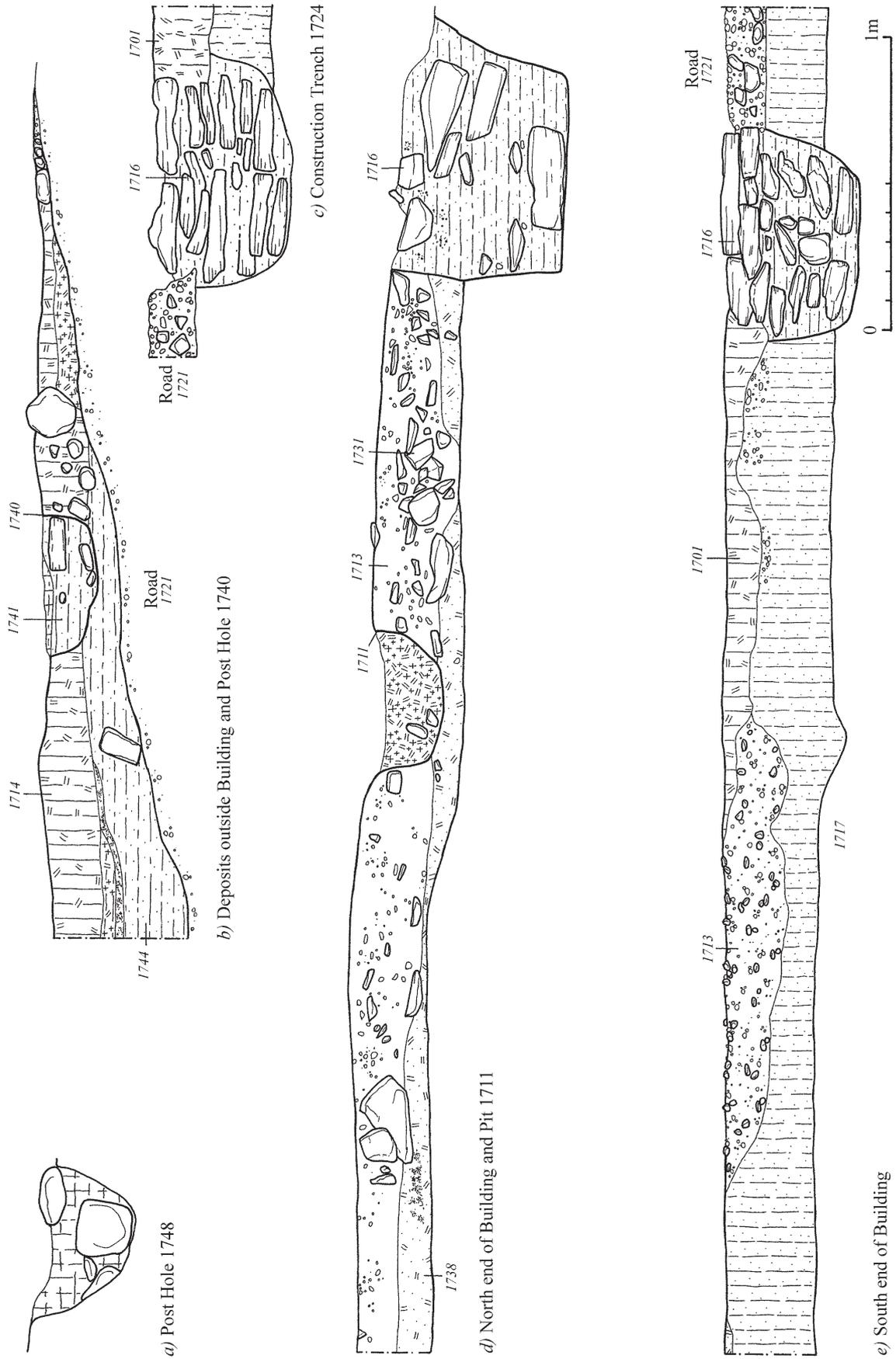


FIG. 5.9 Sections across the *fabrica* and associated deposits: a. post-hole 1748; b. deposits outside north end and post-hole 1740; c. construction trench 1724; d. north end of building and pit 1711; e. south end of building

the stone wall-base. This would seem to indicate that the upper part of the wall of wattle and daub had been pushed over, though the quantities of charcoal were too small to support any suggestion that the building had been burnt down. Some mixing of the demolition layer appeared to have taken place, for the floor level (1713) beneath it on the west side of the building was in fragmentary condition (FIG. 5.9e), though this could have been the result of differential wear. Finally, a single small oval pit (1711) had been cut through the floor to a depth of only 0.2m (FIG. 5.9d). It was packed with burnt clay, contained charcoal and some artefacts, and would seem to have been filled during the process of demolition.

There are hints from immediately outside the north-west corner of the building of post-fort use of the area. These tie in with the clearer evidence from the north-east corner of Barrack 3 (above 5.2.4). Immediately overlying the *intervallum* road was a wash of silty sand (1744) of varying depth, almost certainly deposited as a result of the natural drainage which led down to this corner of the fort (above 5.2). This was sealed by thin layers of charcoal and burnt daub, presumably marking the demolition of the adjacent buildings; and was in turn sealed by a thicker and more extensive clay-loam layer (1714) containing a variety of artefacts (FIG. 5.9b). This sequence would seem to indicate continued occupation in the immediate vicinity after the demolition of the internal buildings, and raises the possibility that the *fabrica* was still in use. Its demolition would then have occurred at some later date and would account for the second demolition layer (760) which spread over the north-east corner of Barrack 3 (above 5.2.4). Alternatively, the group of shallow post-holes broadly mirroring the north wall of Barrack 3 (above 5.2.4), whose line was continued by a sixth example (1740) immediately outside the north-west corner of the *fabrica*, may have constituted some form of lean-to shelter serving a similar function. However, post-hole 1740, which contained demolition material in its upper fill, was cut into the accumulated deposits just outside the building (FIG. 5.9b). If it was contemporary with the other group of posts referred to above, then the lean-to structure must represent a slightly later phase of activity.

5.3.5 ASSOCIATED FINDS

There were surprisingly few finds from the *fabrica*. Most derived from demolition contexts, though some came from construction contexts.

- 1701, plough-disturbed demolition layer across *fabrica*: iron ferrule (no. 123), iron tool (no. 140), iron plate (no. 210), 1 piece unidentified copper alloy, some 15 sherds of coarse pottery, including type 62, 1 sherd of samian, over 90 sherds of amphora, 9 pieces of bottle glass, some 15 nails, 1 piece of ceramic building material, 1 sheep/goat bone, charcoal, daub, some carbonised cereals, both wheat and barley, burnt lithic
- 1712, fill of pit 1711: 1 sherd of burnt amphora, 2 nails, much charcoal
- 1713, floor of *fabrica*: 7 sherds of samian
- 1738, make-up layer beneath northern end of building: 12 sherds of coarse pottery, 1 nail
- 1714, post-fort occupation spread across *via sagularis*: 13 sherds of coarse pottery, including type 185, 1 sherd of samian, 2 pieces of bottle glass, 2 pieces of brick, 1 nail, iron-rich concretion
- 1741, fill of post-hole 1740: 1 sherd of samian, 3 fragments of burnt animal bone

CHAPTER 6

THE FORT – THE *PRAETENTURA*

6.1 BARRACKS 5, 6 AND 7

6.1.1 DESCRIPTION

Barracks 5, 6 and 7 were all located in the eastern half of the *praetentura*, aligned north–south running parallel with the *via praetoria* (*per strigas*) (FIGS 6.1 and 6.2). They are considered together as a group because of their close similarities and juxtaposition. Barracks 6 and 7, the latter backing onto Building 8, were laid out as an associated pair, facing each other across a 4.9m wide metalled road, in the same way as most other barracks in the fort. Barrack 5 stood alone backing onto the *via sagularis* and facing the back of Barrack 6 across a much narrower metalled road some 3.2m wide.

After removal of the ploughsoil, excavation of the upper layers at the south end of Barrack 5 was started by hand. However, because negative features proved virtually impossible to discern (above 1.2) and time was pressing, the whole surface was lowered some 0.3–0.4m further by machine (PLATE 6.1). Pit 1357 in the officers' quarters (27), for example, was recorded during the primary hand-digging stage only as a differential concentration of stones and brick: no soil colour differentiation was visible until the level was taken down. Accordingly, at least 0.3m should be added to the recorded depth of all negative features unless otherwise stated, and the possibility noted that some shallower features, particularly secondary structural elements, may have been lost in the process.

Each block was of simple rectangular plan measuring approximately 47.6m by 8.5m externally. Within those dimensions, however, was a certain amount of variation. The east wall of Barrack 6 was some 0.7m shorter than the west wall, and Barrack 7 was 0.7m longer than the other two. The internal layout was the same in each block. They were centrally divided along their length, though the median wall in Barrack 7 was irregular and slightly off centre so that the rooms on the east side of the building tended to be some 0.2m wider than those on the west. In each case probably the first 12m at the southern end of the block adjacent to the rampart was occupied by the officers' quarters. These were distinguished by the presence of internal features, slight variations in room subdivisions or, in the case of Barrack 7, their complete absence.

The men's accommodation consisted of ten sets of double rooms (*contubernia*), allowing for the restoration of one cross-wall in Barrack 6 of which only the butt end survived. Each room measured internally 4.1m by 3.4m on average, though there was some variation about that norm. This was most marked between the second and third *contubernia* from the north end in Barrack 6 and the sixth and seventh in Barrack 7 which measured respectively 3.1m, 3.7m, 3.8m and 2.9m in width. In both cases this is accounted for simply by the minor misplacement of the intervening partition wall.

The amorphous red/orange staining of the subsoil approximately centrally located in the front rooms (*arma*), as attested in Barracks 1–4, was a regular feature of Barrack 5 also, being noted in all but two of the *contubernia*. As in Barracks 1 and 2, in a number of rooms the staining was located slightly closer to one wall of the *contubernium*, in this case consistently the south wall. The staining was far less common in Barrack 6, with only one example being preserved, and no examples were identified in Barrack 7. Similar stains were also noted in the

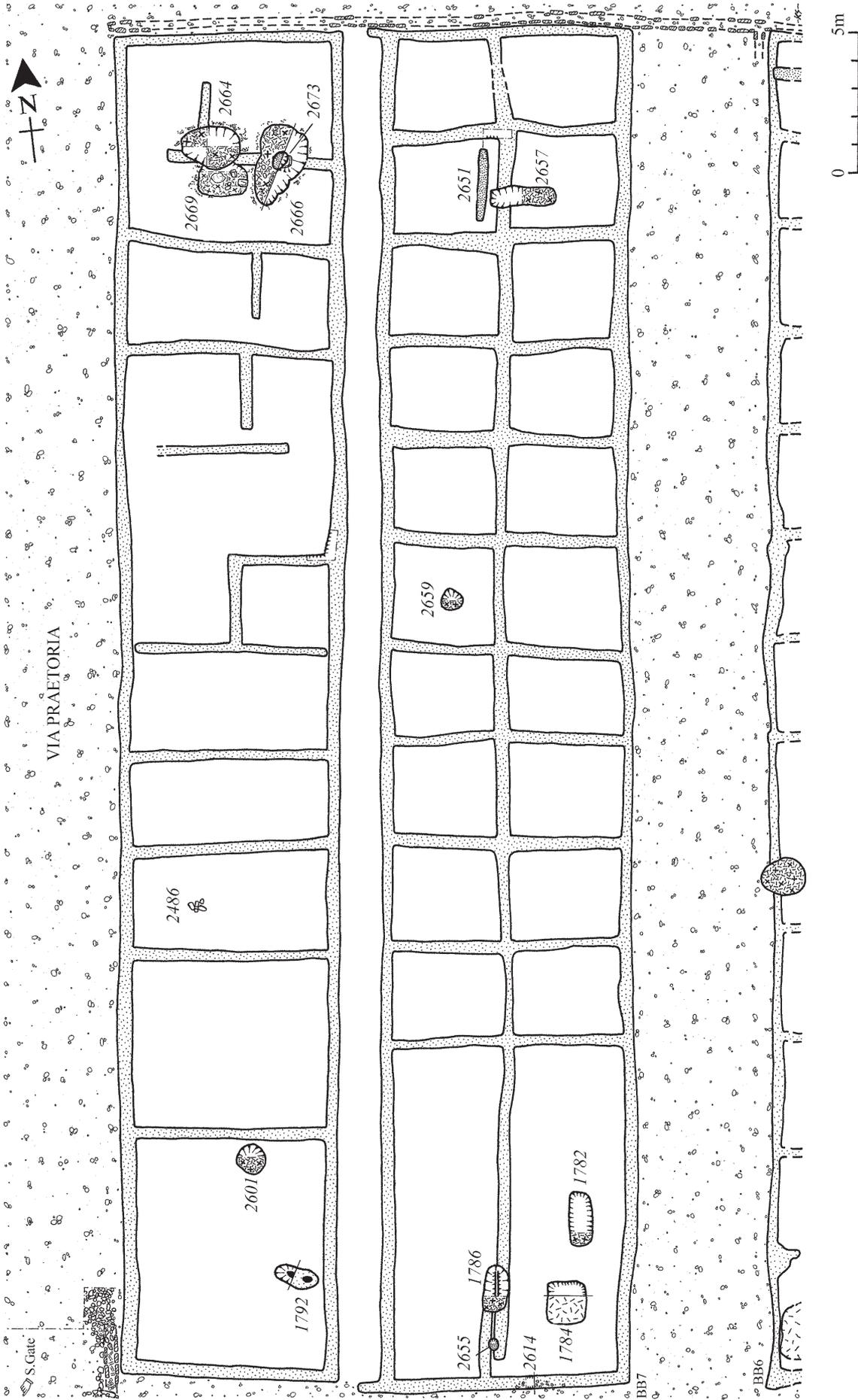


FIG. 6.2 Plan of Barrack 7 and Building 8



PLATE 6.1 Building 8 (with pits 2664, 2666 and 2669) and Barrack 7; view south

officers' quarters in both Barracks 5 and 6. The diminishing frequency of occurrence between Barracks 5 and 7 may possibly be accounted for by a change in subsoil towards the south-west quadrant of the site, in particular by the increase in both its clay-silt content and dampness. That the stains were contemporary with the primary use of the barracks was confirmed in three cases where examples were cut by secondary partition slots, two in Barrack 5 and one in Barrack 6. These features were the same as those already described and discussed above (5.1.1 and 5.1.2) in every respect: colour, location, variable dimensions and consistent orientation. They are, therefore, similarly interpreted as indicating the housing of horses in the front of each *contubernium*. No other internal features were detected in the men's quarters, although a rectangular-shaped protuberance in the north partition wall of the sixth *contubernium* in Barrack 6 may have housed a fitting of some kind. Unfortunately it was not tested by excavation.

In the officers' quarters in Barracks 5 and 6 the subdivision into rooms followed broadly the pattern of the men's accommodation. However, the partitions were discontinuous in some cases, perhaps denoting the position of some of the doorways. They were also generally less regularly spaced. This created rooms of variable width, though the middle pair was consistently narrower. Additionally, the end room at the rear in Barrack 5 was further subdivided by a fragmentary north-south partition creating a short corridor or cubicle 1.3m wide adjacent to the central wall. A single post-hole (1314) may mark a similar subdivision of the innermost rear

room, though the presence of stone chocking, which is rarely attested on the site, may indicate that it was inserted later as a repair. In complete contrast no partitions were observed in the officers' quarters in Barrack 7, which appear simply to have been divided by the median longitudinal wall into two large rooms measuring 12m long by 3.9m and 4.3m wide. However, the possibility that partition wall slots were not dug deeply enough to penetrate the subsequently worm-sorted soil horizon, and were thus not detected, must be borne in mind, particularly as the secondary machining was at its deepest in this area.

The officers' quarters were also distinguished by the presence of various internal features. As with the men's accommodation, some of their front rooms produced evidence of red/orange staining of the subsoil, in all three cases in Barrack 5, but only in the central room in Barrack 6. One of the stains in the central rear room of Barrack 5 was overlain by a wide linear arrangement of pebbles (27) running parallel with the partition walls recorded during the early stages of the excavation before the buildings became visible (above 1.2). However, despite careful examination, no cut was detected either on this surface or in the section left when this level was subsequently lowered by machine. Although this feature could represent the line of a reconstruction slot, its almost exact coincidence with one side of the area of staining beneath suggests that it is more likely to represent part of the fill of the postulated shallow soakaway pit which created the staining, whose cut was neither visible in the worm-sorted upper layers nor deep enough to penetrate the subsoil. Given the depth of secondary machining which took place, this would indicate that these pits were no more than 0.4m deep.

The officers' quarters also contained a number of pits. In each case these were located in the end front room, or its restored position in the case of Barrack 7. Although pit 1378 in Barrack 5 clipped the construction trench (1320) of the median wall and contained demolition material, this was confined to its upper fill (FIG. 6.3f). Its position, broadly paralleling that of pits 1388 and 1784 in Barracks 6 and 7, and the presence of a clean lower fill of sandy silt suggests that it may originally have served some storage function in the officers' quarters. There are fewer doubts about the large 0.86m deep pit (1388) in the south-west corner of Barrack 6. It respects the line of the outer wall of the barrack and had relatively straight sides and a flat bottom (FIG. 6.3b). Though its upper fills contained small amounts of demolition material, the lowest (2202) was waterlogged and clean, apart from a thin layer of charcoal at the top. The adjacent pit 1350, though shallower (0.47m), was similarly straight-sided and flat-bottomed with a lower clean layer sealed by a deeper fill (1351) containing demolition material, including a concentration of large stones near its intersection with pit 1388 (FIG. 6.3a). However, the soil matrix of the upper fills of the two pits was indistinguishable suggesting that they had been in use contemporaneously and filled at the same time. Exactly what function these conjoined pits served was not immediately clear, though their configuration is not dissimilar to pits in Barracks 11 and 12 interpreted as latrine pits (below 6.4.1). The latter, however, drained to the outside of the building, so that some form of storage function may be more likely in this case. There was nothing in the environmental sample to indicate the presence of cess (below 11.2). Pit 1784 in Barrack 7, surviving to a depth of only 0.48m, was almost square with straight sides and a flat bottom (FIG. 6.3c). Its filling derived from the process of demolition, including burning in situ (below 6.1.4) (PLATE 6.2). This indicated that it had remained open, though what original function it performed is uncertain. Once again its original use for some form of storage seems most likely.

6.1.2 INTERPRETATION AND ANALOGIES

Both in terms of their size and morphology there seems little reason to doubt that buildings 5–7 were barracks. Indeed, the buildings fall into a common category of rectangular accommodation blocks within auxiliary forts, analogies for which have already been discussed above (5.1.2; TABLE 5.1). Although the overall length of each of these barracks is some 3.2m greater than Barracks 1 and 2, the size of the men's accommodation remains largely the same. The overall dimensions of the men's accommodation lies well within the norm for barrack blocks, as do the sizes of the individual *contubernia* (Davison 1989, 89, 97). The increased length

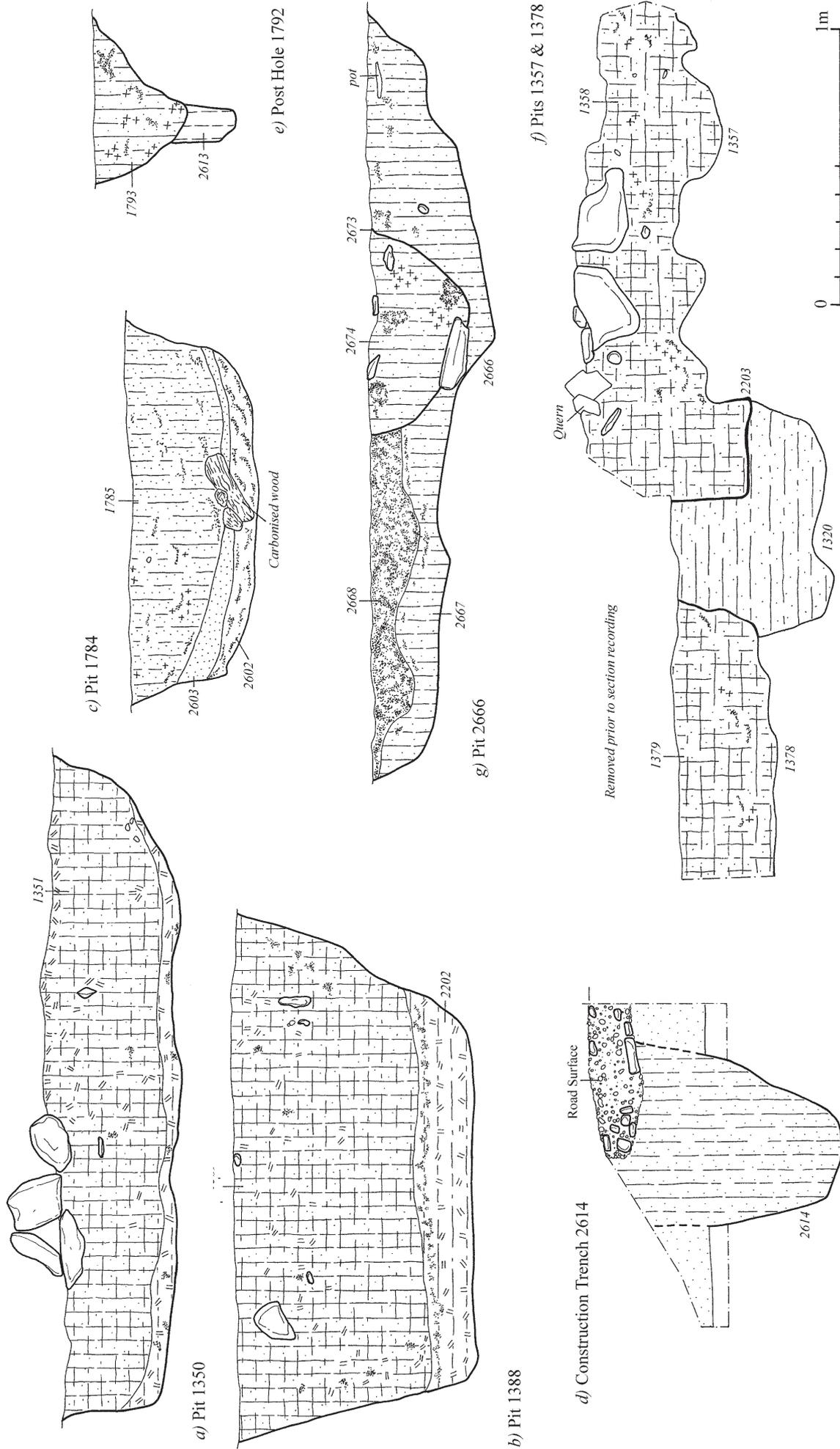


FIG. 6.3 Sections of pits and structural features in the eastern *praetentura*: a. pit 1350, Barrack 6; b. pit 1388, Barrack 6; c. pit 1784, Barrack 7; d. construction trench 2614, Barrack 7 and *intervallum* road; e. post-hole 1792, Building 8; f. pits 1357 and 1378 and construction trench 1320, Barrack 5; g. demolition pit 2666, Building 8



PLATE 6.2 Burnt turf in pit 1784, Barrack 7; view south

probably reflects no more than the greater availability of space for buildings aligned *per strigas* as opposed to *per scamna*. However, the presence of amorphous orange-red staining of the subsoil in the front rooms of the *contubernia* in Barracks 5 and 6, consistent with the positioning of similar stains in Barracks 1–4, would indicate that these two blocks were stable-barracks, providing shared accommodation for both men and horses. Given the general morphological similarities of Barrack 7 and the possibility that the absence of stains within its *contubernia* may have a geological explanation (above), it too may have been a stable-barrack. Further support for this interpretation is provided by two demolition pits (1346 and 1784) in Barracks 5 and 7 respectively, which included in their fills some straw and large quantities of carbonised cereals, mainly barley, which may derive from animal feed and bedding (below 11.2.3), and the presence of one piece of horse harness from a demolition pit behind the interval tower adjacent to Barrack 5 (below 10.5, no. 16).

The officers' quarters in all three blocks are clearly distinguished by the greater irregularity of their internal subdivisions, the presence of contemporary storage or cess pits, and the greater concentration of finds from this end of the building, most of them coming from those pits (below 6.1.5). As is usually the case, the officers' quarters were located at the outer or rampart end of each block. The officers were the main benefactors of the greater space provision provided by the additional length of the blocks compared to Barracks 1–2. Nonetheless, the proportion of each block given over to the officers' quarters (25.2%: TABLE 5.1) still fits neatly into the norm (Davison 1989, 91–2). The subsoil staining attested in Barracks 5 and 6, if correctly interpreted as soakaways for horse urine, would indicate that the officers' too shared their accommodation with their horses.

As already discussed above (5.1.2), each stable-barrack would have housed a *turma* of 30 cavalrymen in the *contubernia*. If the same principles are applied, the three examples of soakaways attested in the officers' quarters in Barrack 5 would indicate facilities sufficient for

up to nine horses, which adds support to the suggestion (Hodgson 2003, 87) that the decurion would have shared his accommodation with two under-officers (*principales*) along with their remounts, since according to Hyginus (*de Munitioibus Castrorum* 16) the decurion had three horses and the *principales* two. This would give a total *turma* strength of 33, close to the traditionally accepted figure (for further discussion see 12.2 below).

The remodelling in phase 2 evident in Barracks 5 and 6 (below 6.1.4) may have reduced the number of *contubernia* to nine, increased the proportion of the officers' quarters to 27.7% of the total, assuming both barracks were also shortened at this stage (see below 6.1.4), and appears not to have provided soakaways for horse urine. As noted above (5.1.2), this may suggest a change in garrison from a cavalry *turma* to an infantry cohort.

6.1.3 CONSTRUCTION AND RECONSTRUCTION

The recovery of structural information from Barracks 5–7 was more limited than elsewhere in the fort since few structural contexts were excavated and the barracks were in most respects regular. Construction trenches were used throughout, except for three post-holes, two of which (2655 and 1366) were certainly, and the third (1314) probably, secondary. The trenches were continuous except in the officers' quarters or where preservation was incomplete. The end walls of Barrack 7 continued beyond the line of the outer wall on the west side as if it was intended to join into the end walls of the adjacent building, as was the case in Barracks 10 and 11 (below 6.4.3). This presumably represents a minor miscalculation. The fact that the metalling of the *via sagularis* overlies the construction trench of the south end wall of all three barracks (e.g. FIG. 6.3d) indicates that the laying out and digging of the construction trenches preceded the metalling of the roads (see also 5.1.3 above).

The main aberrant structural element is the median longitudinal wall in Barrack 7 which is neither straight nor central to the building, though the miscalculation already referred to in respect of the length of the end walls of this block may have played a part in determining the latter situation. Its doubling at the south end may be the result of a repair (below 6.1.4). However, a structural parallel is known for a double central wall in a barrack at the contemporary fort at Cardean where it runs the full length of the block (Robertson 1977, 68–9, though recent re-assessment suggests it may reflect two phases of reconstruction (Woolliscroft and Hoffmann 2006, 161–3).

Though perhaps less immediately obvious than in some of the other barracks in the fort, and showing wide variations, the construction trenches for the main walls tended to be larger than those for the partitions. Few trenches were sectioned to establish their depths, but the full dimensions were recorded for the south end wall (2614) of Barrack 7, where it was partly sealed beneath the *via sagularis*, indicating a surface width of 0.65m and a depth of 0.75m (FIG. 6.3d). Similarly, the central wall trench was at least 0.85m deep and up to 0.85m wide (FIG. 6.3f). This contrasts with the depths of only 0.25m recorded elsewhere in Barrack 5 and further emphasises the potential information loss as a result of the excavation strategy which had to be employed.

No post-impressions were noted, but there is no evidence to contradict that from other buildings in the fort indicating the use of post-trench construction. Similarly, on analogy with other barrack buildings, a single-storey structure with simple low-pitched roof is assumed, the ridge supported by the median wall. The general scatter of daub and its inclusion in demolition pits (below 6.1.4) again confirms the use of wattle and daub construction for the walls. The size and species of wattling employed may be indicated by the charcoal samples from pit 1784 in Barrack 7. Small round wood *c.* 15mm in diameter of hazel, alder and birch was attested (below 11.2). Turf from the same sample may have derived from packing or repair to one of the walls, or even from collapsed roofing, since the nature of the roofing material is unattested. The positioning of the staining in Barrack 5 suggests that the doorways were located towards the south side of each *contubernium* (see above 5.1.3).

6.1.4 STRATIGRAPHY AND PHASING

As in Barrack 1 (above 5.1.4) there may have been some activity on site before the buildings were erected. A possible rectangular pit underlay the median longitudinal wall at the southern end of Barrack 6. Unfortunately the feature was not tested by excavation.

Evidence for more than one phase of use of this group of barracks is reasonably clear, but fragmentary and limited to Barracks 5 and 6. Slight traces of additional partition slots were recorded extending up to 1.5m from the west wall of Barrack 5 near the middle of the first three *contubernia* next to the officers' quarters. In two cases these slots cut the urine soakaway stains in the centre of the *arma*, though their relationship with the outer wall was not confirmed by excavation. The possibility that the linear arrangement of pebbles (27) may represent a reconstruction slot whose cut was not visible has been discussed and rejected above (6.1.1).

Even less survived in Barrack 6. Two slots (1336) on the same east–west alignment inserted towards the middle of the first *contubernium* effectively reduced the length of the block by 1.3m. Again, the front example cut through the remains of a urine soakaway stain and clearly cut both the median and outer longitudinal wall trenches. A stone-packed post-hole (1366) which cuts the partition wall between the first two *contubernia* from the north may also relate to this phase, though it could be just a repair. These are all that remains of what may have been a complete remodelling of the interior of the barracks similar to that noted in Barracks 1 and 2.

There were also other signs of alterations to the structure of Barracks 5 and 7, though whether these are further representations of the remodelling discussed above or necessary repairs is uncertain. The latter interpretation is here preferred since they effect load-bearing longitudinal walls and in one case considerably reduce the effective width of the building. The central wall in the end room in the officers' quarters in Barrack 5 was recut along its eastern side (2203) (FIG. 6.3f). In addition a further longitudinal slot (1398) 0.6–0.7m wide was inserted into the first *contubernium* adjacent to the officers' quarters running parallel to, and some 1.2m in from, the east wall of the barrack. A similar but narrower trench (2651) was positioned some 0.5m from the median wall of the second *contubernium* in Barrack 7, though it did not impinge upon any of the original construction trenches. A single post-hole (2655) had been cut through the median wall of the same barrack at its south end, coinciding with a section where the wall trench had been doubled. Although there was no direct indication that this doubling of the wall represented an even earlier repair, and the relationship between the end wall of the block and the shorter stretch of wall trench was not examined by excavation, such an interpretation remains a possibility on analogy with the repair of the equivalent section of wall in Barrack 5. Moreover, the shorter wall trench has the effect of moving the median wall even further away from a central alignment (above 6.1.3). Finally, the presence of half of a lava quernstone in the filling of the east wall of the officers' quarters of Barrack 5 at a point where it widens may herald a localised repair of the outer wall which was not otherwise attested, since artefacts of any kind within construction trenches are notable by their rarity elsewhere in the fort, except in secondary contexts (above 5.2.4; below 6.3.4).

There was little doubt that at the end of their lives these barrack blocks had been deliberately demolished, though the evidence was strongest for Barracks 5 and 6. Isolated patches of demolition material (1313), including charcoal, burnt daub and quantities of artefacts, were widespread across Barracks 5 and 6. These probably reflect the collecting together of structural debris and other rubbish into bonfires. In addition, similar material filled the secondary post-hole (2655) at the south end of Barrack 7, the upper section of post-hole (1314) in the officers' quarters of Barrack 5, and some 20 pits. The latter were scattered across all three barracks and over half of them relate solely to the demolition process, having been cut through construction trenches presumably in order to extract the timber uprights.

In Barrack 5 two shallow pits (1376 and 1328), the first of which contained daub and coarse pottery, cut through the construction slots at the intersections between the central wall and first and second partitions respectively. A small unexcavated pit (1330) cut through the partition wall between the sixth and seventh *contubernia*, while a slightly larger one (1346), filled with charcoal, daub, and rich in carbonised cereals, cut the repair slot 1398. Three pits cut

construction trenches within the officers' quarters, two at the southern end of the building (1357 and 1378, FIG. 6.3f) and the third (1348) adjacent to the men's accommodation. All three contained burnt daub, pottery and/or brick fragments (below 6.1.5). Particular concentrations of the latter were apparent in pit 1357, though it proved difficult in section to detect the precise line of the cut across repair trench 2203. Despite its stratigraphic relationship with construction trench 1320, the primary function of pit 1378 may relate to the occupation of the barrack (above 6.1.1).

None of the demolition pits in Barrack 6 were excavated. Five (1332, 1338, 1340, 1368 and 2216), distinguished by the presence of charcoal and burnt daub in their fills, cut through the construction trenches of the *contubernia*, three along the median wall and two on the outer walls. A sixth small pit (1374) was located in the middle of the fourth *contubernium* and a seventh (2220) in the eastern end room of the officers' quarters. In the corresponding western room two other adjacent storage or cess pits (1350 and 1388) contained some demolition debris in their upper fills, suggesting that they had still been open when the barrack was demolished (above 6.1.1; FIG. 6.3a and b).

All four demolition pits in Barrack 7 were excavated and were again recognised by their distinctive fills. Two (1786 and 2657) cut the median wall, one at each end of the building. A further small example (2659) was located in the middle of the *arma* of the sixth *contubernium*, while the last (1782) was centrally positioned in the eastern room of the officers' quarters. Immediately adjacent to the latter was a rectangular pit (1784) whose original function is uncertain (above 6.1.1), but whose upper fill (1785) included burnt daub, charcoal, quantities of carbonised cereals, mainly barley, and a variety of artefacts (FIG. 6.3c). Moreover, below that was a thin layer of clean sand (2603) sealing a deposit of charcoal and turf (2602) possibly burnt in situ (PLATE 6.2). The turf probably originated from close to a water source, for it contained plants that prefer a wetland habitat, while the charcoal was from small round wood of various species and probably, therefore, represented the remains of wattling (below 11.2). It seems likely that the sand was thrown into the pit to extinguish the burning material. A potential scenario might be that the turf and wattling derive from burning walling, or even roofing, material that collapsed into the pit during the demolition process, was extinguished, and the pit then filled with rubbish as part of the clearing up operation.

Following on from the demolition there is clear evidence of post-fort use of the area, particularly on the site of Barracks 5 and 6. The *via principalis* was widened by at least 0.2m immediately inside the East Gate sealing the construction trenches at the end of both Barracks 5 and 6. The secondary nature of this metalling (1360), which was best preserved across Barrack 5, was readily apparent from the use of larger cobbles and the presence of both brick and fragments of lava quernstones within it. This widening of the road may have been contemporary with the remodelling of the barracks noted above, for its limit seemed to coincide with the revised alignment of the end of Barrack 6. However, no equivalent new end wall was noted in Barrack 5. Given the widespread evidence of secondary cobbling overlying parts of various other buildings in the fort (below 12.1), it has been interpreted as part of the same phenomenon.

More obviously, a well was dug through the northern end of Barrack 5. Its construction pit (1326) cut the construction trench of the partition wall of the first *contubernium* and also its associated demolition pit (1376). The construction pit for the well was slightly oval in shape, measuring 3.4m by 2.9m at the top. The upper fills were excavated by hand, but the water-table was encountered at a depth of just under 1m and the sides of the cut began to collapse from the constant inflow of water. Thus, once the other features in the area had been examined, both for reasons of safety and increased speed of working, the area around the well was lowered by machine to provide a sump leaving the remaining fill as an island in the centre. At the bottom a wattle lining *c.* 1.1m in diameter was uncovered, similar in form to that recorded in the well in the *principia* (above 4.1.1), but it rapidly collapsed. A sample of the wattles and sails was recovered, all of which proved to be alder (below 11.3), and samples were taken from the primary fill of silty sand to provide information about the local environment (below 6.1.5 and 11.2).

The upper fills of the well shaft consisted of silty clay loam containing some rubbish deposition, though not in abundance, suggesting that there were not large quantities of demolition material to be disposed of when it was filled. The waterlogged lower fill indicated two main types of local habitat, grassland and wetland, and suggested that the material had accumulated naturally (below 11.2).

6.1.5 ASSOCIATED FINDS

Barrack 5

Structural contexts

27, possible fill of soakaway pit, Barrack 5: lava quern fragments

1343, fill of construction trench of Barrack 5: lava quern fragments, though incorrectly assigned to upper demolition layer 1313

1795, fill of construction trench of Barrack 7: 7 fragments of burnt bone

Demolition contexts

14 and 26, general demolition over officers' quarters: 1 copper-alloy disc stud (no. 34), 1 rectangular copper-alloy bar (no. 56), 10 sherds of amphora, 2 sherds of mortarium, 11 sherds of coarse pottery, 1 sherd of samian, 1 melon bead, 1 fragment of bottle glass, fragments of tile and brick, daub, 1 fragment of oyster shell

1313 and 1319, demolition spread (also extends across Barrack 6): iron chisel (no. 137), small fired clay ball (no. 234), coarse pottery, including types 46, 148 and 180, 9 sherds of amphora, 2 sherds of plain samian, lava quern fragments, 1 piece of flint, 1 fragment of burnt animal bone, 1 piece of brick and ceramic building material

1314 and 1356, demolition fills of secondary post-hole 1314 in the officers' quarters: L-shaped copper-alloy bracket (no. 100), 2 sherds of pottery, 1 piece of pottery lamp, 1 piece of bottle glass, 1 piece of brick

1347, fill of demolition pit 1346 overlying slot 1398: unidentifiable copper alloy, large rectangular iron flange (no. 229), 2 sherds of coarse pottery, including type 180, 1 sherd of amphora, fragments of burnt animal bone, daub, charcoal, large quantities of carbonised cereals, mainly barley, some straw, weed seeds (see below 11.2)

1349 and 1383, fills of demolition pit 1348 in the officers' quarters: 3 sherds of amphora, 2 pieces of brick, 1 piece of animal bone, 1 nail, daub

1358, fill of demolition pit 1357 cutting central partition in the officers' quarters: much brick, native disc-shaped quern no. 4, lava quern fragments, 1 nail

1376, demolition pit at the northern end of the block: 2 sherds of amphora, daub, charcoal

1379, fill of demolition pit 1378 cutting central partition in the officers' quarters: 5 sherds of coarse pottery, including type 64, rim of pillar-moulded glass bowl, daub

Post-fort contexts

1327, 1384 and 1385, upper fills of later well 1326 at northern end of block: 8 sherds of coarse pottery, including types 13, 20 and 43, 1 sherd of mortarium, 4 sherds of plain samian, 5 sherds of amphora, 2 pieces of brick, many lava quern fragments, native bun-shaped quern no. 2, 2 nails, daub, charcoal

1360 and 1361 secondary cobbling sealing northern end of block: lava querns nos 13 and 18 and other quern fragments, brick

2241, lining of later well 1326: alder withies and sail

2242, basal fill of later well 1326: waterlogged plant remains mainly in the form of environmental indicators, but including flax/linseed

Barrack 6

1321, primary construction trench: 1 sherd of coarse pottery

1337, fill of secondary construction trench 1336: 1 nail, daub and charcoal

1351, upper demolition fill of pit 1350 in the officers' quarters: 3 sherds of coarse pottery, 3 sherds of amphora, iron concretion

1387 and 1389 upper demolition fills of pit 1388 in the officers' quarters: 1 sherd of coarse pottery, 1 sherd of mortarium, 1 nail, fragments of animal bone

2202, bottom fill of pit 1388 in the officers' quarters: oak and fir charcoal, hazelnut shell

Barrack 7

1783, fill of demolition pit 1782 in the officers' quarters: 1 sherd of coarse pottery, 1 nail

1785 and 2602, demolition fills of pit 1784 in the officers' quarters: small iron spearhead or arrowhead (no. 115), unidentifiable copper alloy, 2 sherds of amphora, 2 nails, charcoal, daub, fragments of animal bone, large quantities of carbonised barley, wheat and possibly straw, hazel alder and birch charcoal, burnt turf (see below 11.2)

2660, fill of demolition pit 2659 near centre of block: 1 sherd of coarse pottery, charcoal

6.2 BUILDING 8

6.2.1 DESCRIPTION

Building 8 was located in the eastern half of the *praetentura* immediately adjacent to the *via praetoria* (FIG. 6.2). It backed onto Barrack 7 with only a narrow gap, some 1.6m wide, separating the two buildings. As with the excavation of other buildings in the *praetentura* (e.g. above 6.1.1), the surface was lowered a further 0.2–0.4m by machine after removal of the topsoil because of the difficulty of discerning negative features in the heavily worm-sorted soil (PLATE 6.1). Thus at least 0.2m should be added to the recorded depth of all such features unless otherwise stated, and the possibility noted that some shallower features may have been lost in the process.

Building 8 was of simple rectangular plan measuring 47.4m by 7.6m externally. Within these dimensions, however, there was considerable variation. The width of the building tapered slightly from north to south varying from 7.8m to 7.3m, while the west wall at 47.2m was 0.4m shorter than the east wall.

The northern two-thirds of the building was subdivided laterally in a manner not unlike that of the *contubernia* partitions in a barrack, though not all of the partition walls extended across the full width of the building. On average the rooms were 3.5m wide internally, but varied in width from 3.1m to 4.2m. Unlike the barrack buildings, however, there was no median longitudinal wall. Four of the rooms were further subdivided along the long axis of the building, but not on the same alignment. In the first room from the north the subdivision separated off approximately the western third, in the third and fourth the eastern. In all three cases a gap was left in the subdividing wall, presumably marking a doorway. In the sixth room the longitudinal wall ran the full width. It was centrally located and, since the east–west partition on the northern side did not extend beyond it, created one small square room and an L-shaped room. A single post-setting (2486) in the ninth room may have represented a further subdivision, but is more likely to have been some form of secondary support (below 6.2.4).

The southern third of the building was divided by a single lateral partition into two unequal sized rooms 8.4m and 6.2m wide, the larger of the two located at the end. A double post-hole (1792) on the eastern side of the larger room may have marked the position of a further lateral partition, but given the change in structural technique employed is likely to have been secondary.

6.2.2 INTERPRETATION AND ANALOGIES

Building 8 superficially resembles a barrack block: it is a simple rectangular building; it is located in the *praetentura* where every other building is a barrack or stable-barrack block; it is the same length as the barracks in the *praetentura*; it has nine subdivisions which resemble

contubernia; and it has two larger rooms at the southern end which might reasonably correspond with the officers' quarters. However, all the other barracks in the *praetentura* are so consistent in the details of their layout that any substantial deviations must call this identification into question. Building 8 is markedly narrower than the average barrack block within the fort, even though its width was not constrained by available space. But more fundamentally it lacks the longitudinal median wall that is a distinctive characteristic of all other barracks and stable-barracks in the fort.

Analogies for narrow rectangular buildings in similar locations within auxiliary forts are not far to seek. Two such buildings were identified at Fendoch, one on either side of the *via praetoria*, though these were only 5.5m wide and not investigated in any detail (Richmond and McIntyre 1939, 136–70). Three buildings (R6, P3 and P6) rather fragmentarily recorded at Pen Llystyn may fall into the same category, though they vary both in their dimensions and location (Hogg 1968, 138–42). Indeed, only building P3 was markedly narrower than the barrack blocks. At Strageath a building with dimensions similar to Building 8 was located alongside the *via principalis*, though it does possess at least a partial longitudinal partition (Frere and Wilkes 1989, 71).

The function of such buildings is rarely asserted with any confidence. The three most common interpretations are stable, workshop or storeroom. There is no positive evidence in the form of associated pits or burning to support identification as a workshop, and an alternative candidate within the fort has better credentials (above 5.3). Identification as a stable block is possible, but there is no shortage of accommodation for horses on site and once again there is a lack of positive evidence of their presence in this building. There were, for example, no signs of either drains or soakaway pits, which have occasionally been attested elsewhere (Hartley 1966, 37; Müller 1979, 27; Sommer 1995) and are represented in other barracks at Elginhaugh by staining of the subsoil (above 5.1, 5.2 and 6.1). Moreover, the subdivisions within the building do not lend themselves readily to the provision of accommodation for horses, particularly the two large rooms at one end and the irregular longitudinal partitions at the other. Thus identification of Building 8 as some form of store seems the most likely option, though this conclusion is reached on the basis of negative evidence, primarily by a process of elimination, rather than by virtue of any positive attributes, such as an open front to facilitate the entry of wagons or the presence of large quantities of discarded artefacts.

6.2.3 CONSTRUCTION AND RECONSTRUCTION

Only limited structural evidence was recovered from Building 8 since few of the construction trenches were excavated. Construction trenches were used throughout, except for two probably secondary post-holes, and were, for the most part, continuous. However, two of the east–west partitions did not join the outer walls and most of the north–south subdivisions were linked into the lateral partitions on only one side.

The construction trenches for the outer walls tended to be wider than those for the partitions: the former averaging 0.45m, the latter 0.35m. In the one case where the depths were tested, the outer wall trench was 0.15m deeper than the partition wall, though the latter survived only to a depth of 0.1m. This would confirm the load-bearing function of the outer walls. No post-impressions were recorded in any of the construction trenches, though two were noted in the probably secondary post-hole (1792). These measured 0.25m by 0.42m and 0.28m by 0.4m respectively, though both were oval in shape and had clearly been disturbed during demolition, thus distorting and increasing their surface dimensions (below 6.2.4). The section indicated a diameter of only 0.12m for one (2613) and suggested that the post may have been at least partially driven into the subsoil (FIG. 6.3e). Despite the lack of post-impressions, post-trench construction is assumed on analogy with other buildings in the fort. Indeed, the differential depth recorded between the single outer and partition wall trenches examined would have made sleeper-beam construction impractical.

A single-storey structure with simple low-pitched roof is assumed, on analogy with the barrack buildings. But, in contrast to the barracks, there was no median wall to support the

ridge and with it much of the weight of the roof. Despite the lesser width of the building, the provision of some form of ties across the roof span would have been necessary to prevent the feet of the rafters from causing the wall to spread. The presence of burnt daub and charcoal in demolition contexts at both ends of the building again confirms the use of wattle and daub for the walls.

6.2.4 STRATIGRAPHY AND PHASING

Only one phase of use of this building was apparent, though there were indications of possible repairs: a double post-hole (1792) on the east side of the large room at the southern end and a stone post-setting (2486) in the middle of the next but one room north. Given the use of a different structural technique and the isolated nature of the features, these seem likely to have been repairs, as were attested in a number of other buildings (e.g. above 5.2.4, 6.1.4).

There was clear, if limited, evidence of deliberate demolition of the building. This was best exemplified in the double post-hole (1792) at the southern end, where the posts had been dug out and the upper disturbance of the post-hole subsequently filled with demolition material (FIG. 6.3e).

A complex of shallow pits (2664, 2666 and 2669) at the northern end of the building was also related to the demolition process (PLATE 6.1). Two cut the construction trenches of partition walls and may indicate points at which uprights had been dug out. Though only one (2666) contained burnt daub and substantial quantities of carbonised cereals, charcoal was abundant and some carbonised cereals were present in most of them (below 11.2). Slight orange discoloration of the sand subsoil around pit 2666 indicated that some burning had taken place in situ, though it was not extensive enough to prompt identification as a hearth or furnace; rather it seems likely that unwanted timbers had been collected together and burnt. An isolated, shallow, circular pit (2601) at the opposite end of the building also relates to this phase as it was filled with demolition debris, including burnt daub and large quantities of artefacts (below 6.2.5).

There was a single hint of post-fort use of the area: a post-hole (2673) had been cut through the filling of demolition pit 2666 (FIG. 6.3g). There was no other indication of any structure to which it might relate, though it did continue the same general alignment of the broad, shallow, post-fort gullies (1545 and 2421) which cut across Barracks 9–12 on the other side of the *via praetoria* (below 6.3.4 and 6.4.4). The post-hole contained demolition material, including some burnt daub, presumably derived from the general demolition deposits through which it had been dug.

6.2.5 ASSOCIATED FINDS

Demolition contexts

- 1755, fill of demolition pit 2601: 2 sherds of plain samian, including 1 stamp (S9), much coarse pottery, 3 sherds of amphora, 2 pieces of bottle glass, nails, mass of corroded iron, 1 piece of flint, numerous fragments of burnt animal bone, charcoal, daub, some charred cereals and weed seeds
- 1793, fill of secondary post-hole 1792: 2 sherds of coarse pottery, 1 sherd of plain samian, fragment of lava quernstone, 1 nail, daub
- 2665, fill of demolition pit 2664: 1 sherd of coarse pottery, 1 sherd of amphora, 1 nail, charcoal, a few charred cereals
- 2667 and 2668 fill of demolition pit 2666: unidentifiable copper alloy, much coarse pottery, including type 210, 2 sherds of amphora, daub, large quantities of charred cereals and some weed seeds (below 11.2)
- 2670, fill of demolition pit 2669: a few charred cereals

6.3 BARRACKS 9 AND 10

6.3.1 DESCRIPTION

Barracks 9 and 10 are both located in the western half of the *praetentura*, aligned north–south running parallel with and immediately adjacent to the *via praetoria* (*per strigas*) (FIG. 6.4). They are considered together because, even though Barrack 10 is structurally linked to Barrack 11, onto which it backs, it was clearly laid out as one of a pair with Barrack 9, the two facing each other across a 4.3m wide metalled road in the same way as most other barracks in the fort.

As with much of the site, because negative features proved virtually impossible to discern (above 1.2) and there was not enough time to excavate entirely by hand, the area of the buildings was lowered some 0.2–0.3m further by machine. Accordingly, at least this amount should be added to the recorded depth of all negative features unless otherwise stated and the possibility noted that some shallower features, particularly secondary structural elements, may have been lost in the process. This strategy no doubt accounts for some of the discontinuous partition trenches in Barrack 9, for example.

Each block was of simple rectangular plan measuring approximately 47.3m by 8.3m externally. Within those dimensions, however, was a certain amount of variation. The east wall of Barrack 10 was some 0.3m shorter than the west wall, and Barrack 9 was 0.6m narrower at one end than the other. The internal layout was the same in each block. They were centrally divided along their length, though the median wall in Barrack 10, as in Barrack 7, was slightly off centre so that the rooms on the west side of the building tended to be some 0.3m wider than those on the east. In each case the southern end adjacent to the rampart was occupied by the officers' quarters, distinguished by internal features and slight variation in, or absence of, room subdivisions.

The men's accommodation consisted of ten sets of double rooms (*contubernia*), allowing for the restoration of cross-walls destroyed by later disturbance. Each room measured internally 4m by 3.5m on average, though there was some variation about that norm with widths of 3.3m to 3.8m. No examples of the red/orange staining of the subsoil, attested in Barracks 1–6, were recorded in the men's accommodation, though one was noted in the officers' quarters in Barrack 9 (below). This general absence may be accounted for by the increase in both the clay-silt content and dampness of the subsoil towards the south-west quadrant of the fort. No other internal features were detected in the men's quarters.

The officers' quarters varied in length externally from 11.2m in Barrack 9 to 11.8m in Barrack 10. The former had only one room subdivision. It was located on the east side of the building, dividing off a room 4.1m wide at the northern end. Subdivisions in Barrack 10 were more complex with signs of remodelling (below 6.3.4). On the east side tripartite subdivisions, broadly equivalent to those of the *contubernia*, were maintained, though the southern partition did not run across the full width. The central room was somewhat narrower (2.8m) than the other two and was additionally subdivided by a north–south partition. In the end room a further partition wall ran parallel to the median longitudinal wall apparently creating a corridor only 0.7m wide. Alternatively this might have been a repair trench, though it was cut by the later remodelling and its dimensions were similar to those of the primary construction trenches. Only two short lengths of partition survived on the west side, one running east–west and one north–south, though the possibility that other partition wall slots were not dug deeply enough to penetrate the subsequently worm-sorted soil horizon, and were thus not detected, must be borne in mind.

The officers' quarters were also distinguished by the presence of various internal features and the increased concentration of finds (below 6.3.5). A single red/orange stain was recorded in the undivided front room of Barrack 9, like the examples from the officers' quarters in Barracks 5 and 6 (above 6.1). As with the officers' quarters in a number of other barrack blocks (e.g. above 6.1.1), several pits were noted, mostly located in the end front room. Pit 1555 in the south-west corner of Barrack 9 was subrectangular, respecting the line of the outer wall of the barrack, relatively straight-sided and flat-bottomed, though surviving to a depth of only 0.36m

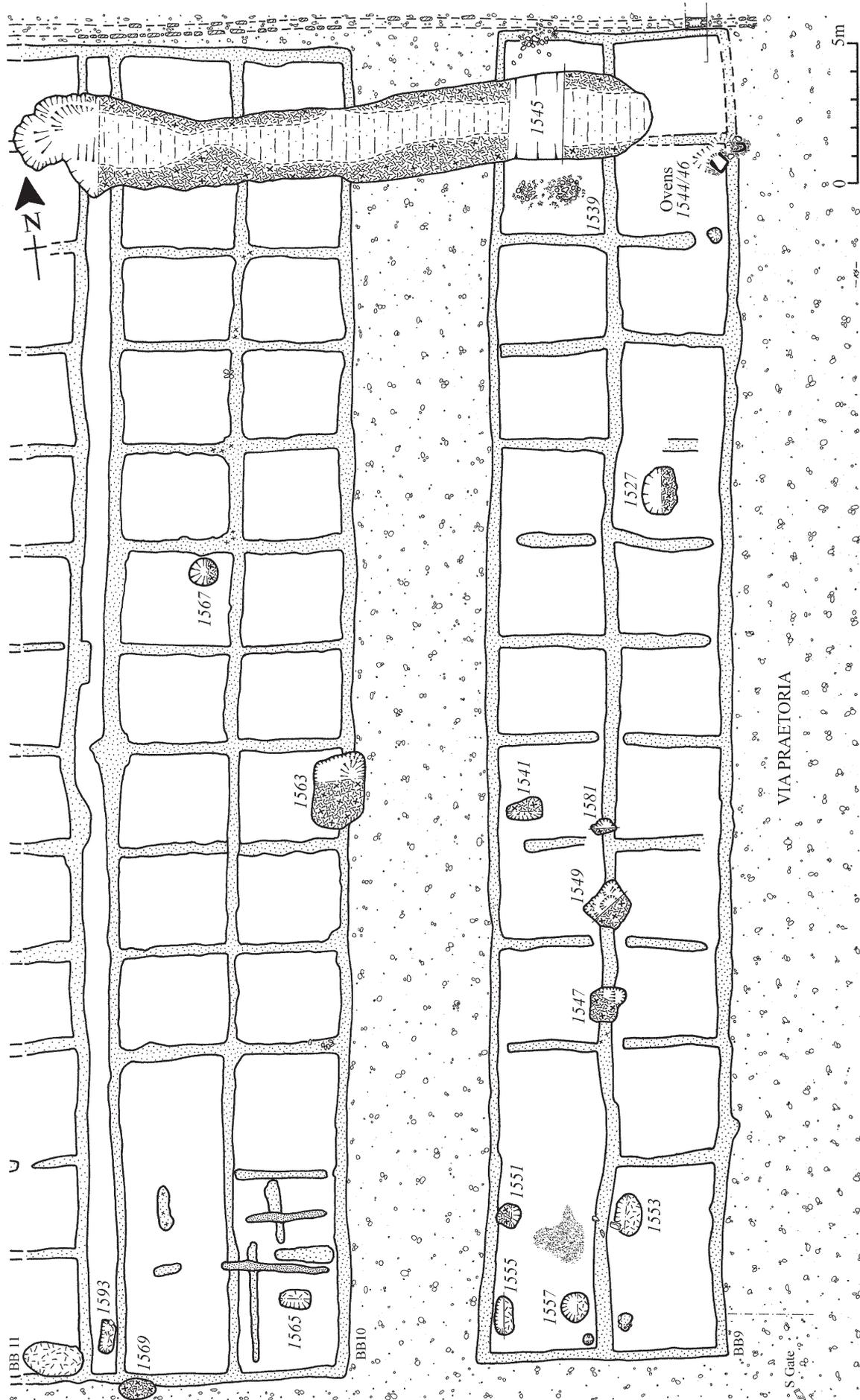


FIG. 6.4 Plan of Barracks 9 and 10

(FIG. 6.6a). The clean fill of sandy silt (1556), uncontaminated by demolition material, suggests that it may have served some storage function, but had gone out of use before the demolition of the building. Charred cereal grains were recorded from the filling (below 11.2). A shallow circular pit (1557) at the east side of the same room contained some pottery and a slightly larger pit (1553) on the other side of the median wall showed slight traces of charcoal and burnt daub. These pits were otherwise clean and both seem likely to relate to the occupation rather than demolition phase. Only one pit (1565) was noted in Barrack 10, in the end room at the front, surviving to a depth of only 0.27m. Subrectangular with sharply sloping sides and a flat bottom, it lacked the distinctive filling of a demolition pit, though it contained daub, charcoal and some carbonised grain (below 11.2). Again some storage function seems most likely. A similar-shaped shallow pit (1593), though with more gently sloping sides, positioned in the narrow gap between Barracks 10 and 11 also lacked the characteristic filling of a demolition pit and probably served for storage or more probably rubbish disposal during the life of the fort.

6.3.2 INTERPRETATION AND ANALOGIES

In terms of overall plan and layout, buildings 9 and 10 are sufficiently similar to Barracks 5-7 (above 6.1.2.) to require only limited further discussion of their identification. Neither minor reductions in their average length and width, nor the slight reduction in the proportion given over to the officers' quarters (TABLE 5.1) are statistically significant, since they are less than the variations in dimensions attested within each of the buildings.

The provision of ten *contubernia* would, on standard assumptions about the number of men per *contubernium*, give a barrack total of 80 and indicate that each block was intended to house a century of infantry troops. However, the identification of an amorphous orange-red stain in the subsoil in one of the front rooms of the officers' quarters of Barrack 9, if correctly interpreted as a soakaway for urine (above 5.1.2), would indicate the presence of horses. Since this was not a normal provision for infantry centurions, it would in turn imply that this block was, like Barracks 1-6, a stable-barrack, the absence of further stains again being accounted for by the increase in both the clay-silt content and dampness of the subsoil (above 6.1.1). Given the general morphological similarities of Barrack 10, it too may have been a stable-barrack, though none of the distinctive orange-red stains was detected.

6.3.3 CONSTRUCTION AND RECONSTRUCTION

The recovery of structural information from Barracks 9-10 was rather greater than from most other blocks, since all of the construction trenches in Barrack 10 were excavated (FIG. 6.5). Post-trench construction was used throughout. No post-impressions were recovered in the filling of the trenches, but posts had penetrated the subsoil in five places (below). Moreover, both the irregularity of the base of the trenches and the variation in depth between cross walls, including one of the end walls, and longitudinal walls confirmed that sleeper-beam construction would have been impractical.

The post-trenches were continuous except for the partitions in the officers' quarters of Barrack 10, or where the preservation or the visibility of features was poor in Barrack 9. The end wall trenches of Barrack 10 continued unbroken beyond the line of the outer wall on the west side to form the end walls of the adjacent Barrack 11, though the presence of pit 1593 in the narrow space between the two barracks would seem to indicate that the wall itself was not continuous and that above ground level the two buildings were free-standing. It does suggest, however, that the main outlines of the buildings were demarcated on the ground and the trenches dug out at an early stage in laying out the fort. Given the extent to which they were excavated, the general paucity of artefacts from the construction trenches of Barrack 10 (below 6.3.5), in contrast to that observed elsewhere in the fort from secondary or repair contexts (e.g. above 5.2.4), lends further support to this argument. Nonetheless, a certain amount of rubbish was already being deposited at the site during the course of building work.

As with a number of other barracks, some considerable irregularity is evident in the overall

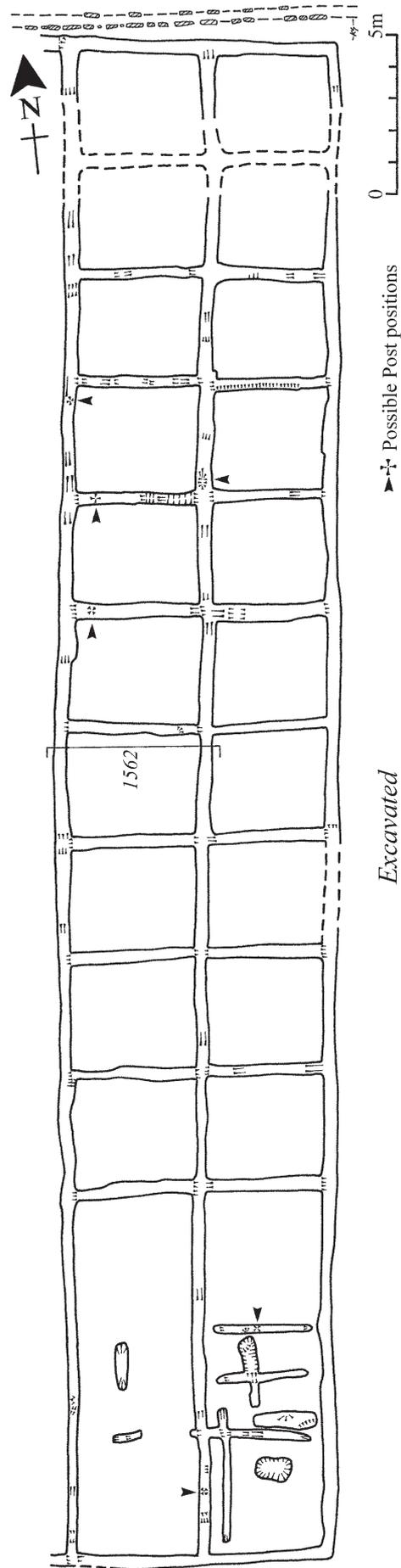


FIG. 6.5 Plan of Barrack 10 completely excavated

layout, not merely in the positioning of the partition walls, but in the main longitudinal walls also. Difficulty would have been experienced in erecting a straight wall within the median and west wall trenches of Barrack 9, for example.

Unlike most other barrack blocks within the fort, the construction trenches for the main walls were not obviously consistently wider than those for the partitions, both varying from *c.* 0.3m to 0.5m. However, the main longitudinal and end walls in Barrack 10 were clearly dug to a greater depth (FIG. 6.5; PLATE 6.3), though not by more than *c.* 0.2m. The full depth of the main wall construction trenches, where this was recorded in section across the centre of Barrack 10 (1562) and at the north end of Barrack 9, varied from 0.52m to 0.96m (FIGS 6.6b and 7.25a). Largely protected from plough damage by the vicinity of the *via principalis*, the larger dimension represents almost the original depth. Post-impressions, with diameters of 0.12m, 0.12m, 0.14m, 0.16m and 0.2m, were recorded penetrating below the bottom of the construction trenches at five points, three in partition trenches, one in the median wall and one in the outer west wall. The larger dimensions of the latter two posts in the longitudinal walls, combined with the greater depths of those trenches, provides further confirmation that they were the main load-bearing walls.

Thus a single-storey structure with simple low-pitched roof is again assumed, the ridge supported by the central median wall. The general scatter of daub and its inclusion in demolition pits confirms once more the use of wattle and daub construction for the walls.

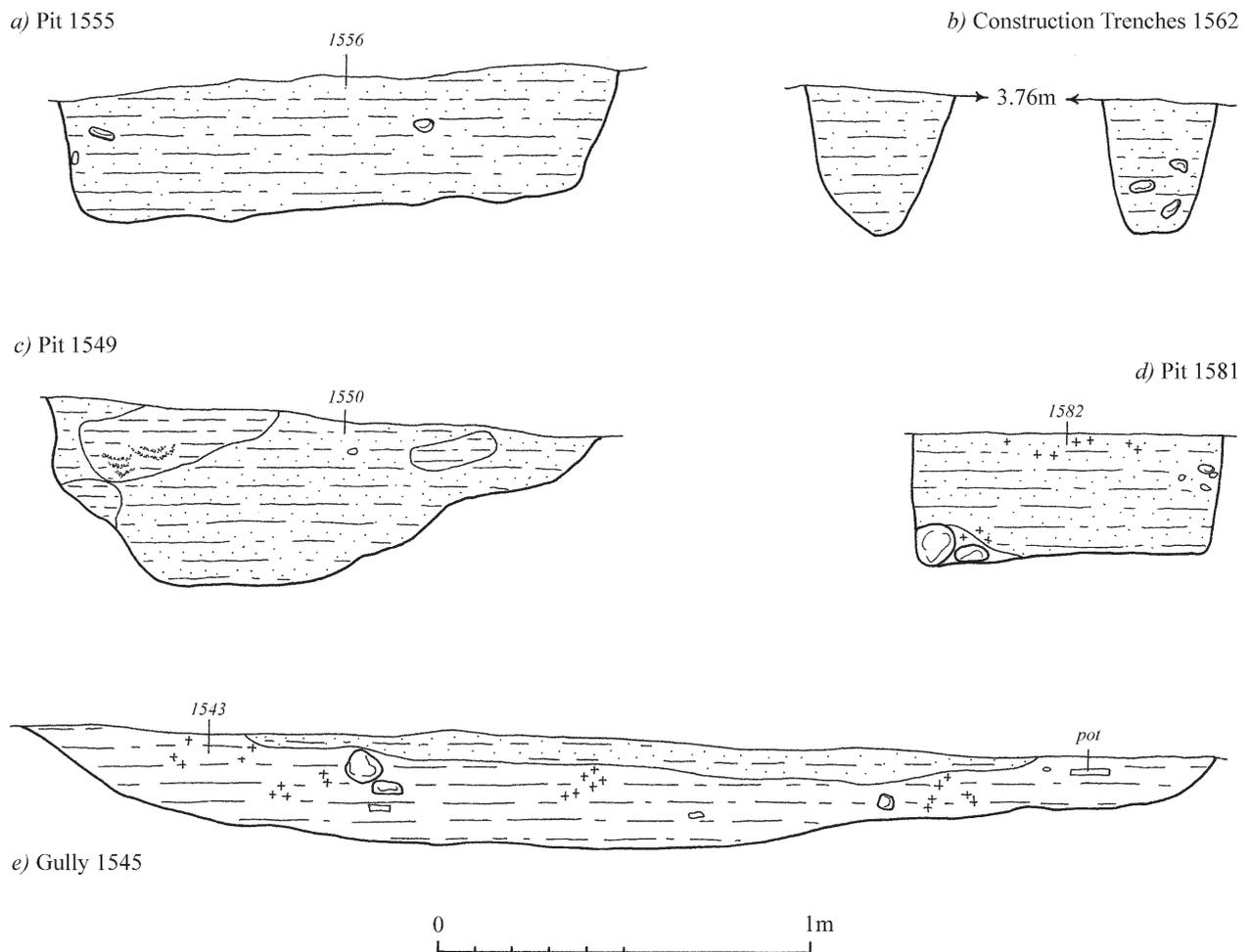


FIG. 6.6 Sections of pits, construction trenches and post-fort demarcation gully, Barracks 9 and 10: a. pit 1555; b. construction trenches 1562 (both Barrack 10); c. demolition pit 1549; d. demolition pit 1581 (both Barrack 9); e. post-fort gully 1545



PLATE 6.3 Barrack 10 completely excavated; view south

6.3.4 STRATIGRAPHY AND PHASING

Evidence for more than one phase of use of this pair of buildings is restricted to Barrack 10. Two additional east–west partitions were inserted at the front of the building in the officers’ quarters cutting primary wall trenches, which were presumably removed. Assuming that the most northerly partition wall was also dispensed with at this time, these changes would have created a narrow east–west corridor dividing one standard-sized room from a larger one to the north. The only other possible hint of a second phase is where the median wall appeared to cut the partition between the eighth and ninth *contubernia*, but this is more likely to reflect the sequence of construction, as in Barracks 3 and 4 (above 5.2.3), than a different structural phase.

In contrast to a number of other buildings in the fort, no major repairs were attested in either block. However, there is evidence of some additional post-holes. A single stone post-setting, similar to examples noted in Barracks 3 and 4 (above 5.2.4), was located immediately adjacent to the median wall in the fourth *contubernium* in Barrack 10. Two further possible post-holes were noted on either side of the median wall at the southern end of the officers’ quarters in Barrack 9, but were not investigated in detail. Because it runs parallel to and only 0.7m away from the median wall, it is also possible that the north–south partition wall at the south end of Barrack 10 is a repair, though it is assumed above to be primary and to demarcate a narrow corridor (above 6.3.1).

The evidence for the deliberate demolition of both barracks was quite clear. Burnt daub was

noted at several points in their construction trenches, presumably deposited where the filling had been disturbed by the removal of uprights. In addition, six of the nine pits filled with demolition material (below) had been cut through construction trenches, particularly along the median wall in Barrack 9, presumably in order to extract the timber uprights. The expansion of the construction trench at the junction of the outer west wall in Barrack 10 with the partition between the seventh and eighth *contubernia* may also have resulted from the extraction of a post, though no demolition material was noted in the filling of the trench at that point. Finally, extensive spreads of demolition material (1535 and 1536), including charcoal, burnt daub and quantities of artefacts (below 6.3.5), overlay the structural remains at the northern end of both barracks. These presumably resulted from the collection of structural debris for burning.

In Barrack 9 three shallow pits (1547, 1549 and 1581, FIG. 6.6c and d) cut through the construction trench of the median wall. Only the second contained pottery and other artefacts, but all three contained burnt daub, the first two in some considerable quantity. A fourth pit (1551) containing charcoal, burnt daub and some other artefacts cut through the wall on the west side of the officers' quarters, while a fifth (1527), similarly endowed, was located in the fifth *contubernium* on the east side of the barrack. None of the pits was deeper than 0.46m and some survived to a depth of only 0.2m.

One large pit (1563), containing pottery, glass and burnt daub, cut the outer east wall trench of Barrack 10, while a smaller unexcavated pit (1569) cut through the *via sagularis* and the construction trench at the south end of the block, though there was only a little demolition debris visible in its fill. One further pit (1567) containing demolition material was recorded in Barrack 10 in the sixth *contubernium* on the west side of the block.

Finally, an unusual pit (1541) was discovered in the eighth *contubernium* on the west side of Barrack 9. It was quite shallow, surviving to a depth of only 0.32m from the bottom of the worm-sorted horizon, but was filled by a mass of unused iron nails (below 10.9.2) mainly corroded together into large lumps (PLATE 6.4). Though the pit cut through a general spread of demolition material, it seems best interpreted as dug to dispose of stock that was surplus to requirements within the area of the recently demolished fort. Even in their corroded state the nails weighed over 160kg and would have constituted a considerable burden for the evacuating



PLATE 6.4 Nail pit 1541 under excavation, Barrack 9; view north

troops. The circumstances are directly analogous, if on a considerably smaller scale, to the contemporary burial of some ten tons of nails in the *fabrica* of the legionary fortress at Inchtuthil (Pitts and St Joseph 1985, 109–13). Though it is argued there that the burial was to prevent later recovery of the nails by the natives, it is possible that it was merely part of the general tidying up process on evacuation of the fort.

Following on from the demolition of Barracks 9 and 10 there is clear evidence of post-fort use of the area. As recorded elsewhere in the fort (e.g. above 4.3.4; 5.2.4), slight traces of large cobbling were noted which served to increase the width of the *via principalis* so that it covered the construction trench at the north end of Barrack 9. More obvious, however, was a U-shaped gully (1545) some 3m wide and 0.6m deep (FIG. 6.6e) which ran approximately parallel to the *via principalis* from the middle of Barrack 9 to the east side of Barrack 11. After a short gap the line was continued by a similar but shorter feature across Barrack 12 (below 6.4.4). The gully cut through demolition spreads, removed virtually all trace of the first partition wall in Barracks 9 and 10 and even cut through the metalling of the alley between the two blocks. This clearly was not simply a demolition feature and had presumably served to separate off the south-west corner from the rest of the interior of the fort after the buildings had been demolished (see below 12.1). Though it contained demolition debris in its lower fill (1543), including various artefacts (below 6.3.5), this material was probably redeposited from the collapse back into the gully of material dug from the demolition spreads. The upper filling of the gully, particularly towards the centre, was predominantly clean grey silty clay, which suggests that it had accumulated more gradually. Finally, immediately within the demarcated area by the eastern butt end of the gully and overlying the end of Barrack 9 were two pairs of ovens (1539 and 1544/1546) (discussed in full below 7.5).

6.3.5 ASSOCIATED FINDS

Barrack 9

Construction and contemporary contexts

1556, fill of pit 1555: 1 nail

1558, fill of shallow pit 1557: wide curled lead strip (no. 228), 4 sherds of coarse pottery

1561 construction trenches: 1 piece of flint

Demolition contexts

1536, demolition spread: 30 sherds of coarse pottery including types 68 and 124, 27 sherds of amphora including one stamped Dressel 20 (no. 826), 1 piece of heat-distorted glass, iron knife blade (no. 172), nails, 4 fragments of burnt animal bone, 4 pieces of flint

1527, fill of pit 1526: 1 sherd of amphora

1542, fill of demolition pit 1541: 160kg of nails (10.9.2), 1 sherd of coarse pottery

1550, fill of shallow demolition pit 1549 cutting through the construction trench of the median wall: 1 sherd of amphora, many lava quern fragments, charcoal, daub

1552, fill of demolition pit 1551 cutting through the wall on the west side of the officers' quarters: 1 sherd of plain samian, 1 sherd of coarse pottery, nail, charcoal, daub

1548, fill of 1547 cutting through the construction trench of the median wall: daub

1582, fill of small demolition pit 1581 cutting through the construction trench of the median wall: daub

Barrack 10

Construction and contemporary contexts

1566, fill of pit 1565: 1 sherd of prehistoric pottery, a few carbonised grains of barley, alder charcoal, 2 fragments of burnt animal bone, daub

1594, fill of pit 1593: 3 sherds of coarse pottery,

1562, fill of construction trench: 2 sherds of plain samian, 4 sherds of coarse pottery, including type 175, nails

Demolition contexts

1535, demolition spread: 6 sherds of amphora, 4 sherds of coarse pottery, 3 sherds of mortarium, daub, charcoal

1564, fill of pit 1563: 1 sherd of coarse pottery type 62, 1 sherd of amphora, 1 piece of bottle glass

1568, fill of pit 1567: 2 sherds of coarse pottery

Post-fort features

1540 and 1543, fills of gully 1545 cutting across Barracks 9–11 immediately to the south of the *via principalis*: copper-alloy couch mount in the form of a helmeted bust of Minerva (no. 53), fragment of a copper-alloy apron pendant (no. 27), fragment of unidentifiable lead, 13 sherds of coarse pottery; 1 sherd of mortarium, 1 sherd of amphora, 1 piece of heat-distorted glass, 6 fragments of burnt animal bone, charcoal, daub

6.4 BARRACKS 11 AND 12

6.4.1 DESCRIPTION

Barracks 11 and 12 were located in the south-west corner of the *praetentura*, aligned north–south (*per strigas*) running parallel with and immediately adjacent to the *via praetoria* (FIG. 6.7). They are considered together because, even though Barrack 11 is structurally linked to Barrack 10 onto which it backs, it was clearly laid out as one of a pair with Barrack 12, the two facing each other across a 5m wide metalled road in the same way as most other barracks in the fort.

As elsewhere on the site, because negative features proved virtually impossible to discern (above 1.2) and there was not enough time to excavate entirely by hand, the area of the buildings was lowered a further 0.2–0.3m below the primary stripping of topsoil by machine. Accordingly, at least this amount should be added to the recorded depth of all negative features unless otherwise stated and the possibility noted that some shallower features, particularly secondary structural elements, may have been lost in the process. This strategy no doubt accounts for some of the missing or discontinuous partition trenches.

Each block was of simple rectangular plan measuring approximately 47.2m by 8.1m externally. Within those dimensions, however, was a certain amount of variation. Barrack 12 was consistently narrower than Barrack 11 with a minimum dimension of 7.8m, while Barrack 11 had a maximum width at its south end of 8.4m. The internal layout was the same in each block. They were centrally divided along their length, though, as in Barracks 7 and 10, their median walls were slightly off centre. In both blocks the rear room tended to be slightly wider than the front in the men's accommodation, but precisely the opposite was the case in the officers' quarters, though the changeover was gradual not abrupt. In each case the officers' quarters, distinguished by internal features and slight variation in, or absence of, room subdivisions, occupied the southern end of the block adjacent to the rampart.

The men's accommodation consisted of ten sets of double rooms (*contubernia*), allowing for the restoration of two cross-walls in Barrack 12. Each inner room measured internally 4m by 3.5m on average, the larger dimension of the corresponding outer room being 0.2m less. But there was considerable variation about that norm with the distances between partition walls ranging from 3m to 4.2m seemingly at random. No examples of the red-orange staining of the subsoil, attested in Barracks 1–6, were recorded. This general absence may be accounted for by the increase in both the clay-silt content and dampness of the subsoil. No other internal features were detected in the men's quarters with the exception of a possible hearth base (2484) in the seventh *contubernium* from the north. This consisted of a semi-circle of stones *c.* 0.6m in diameter projecting from a baulk. Unfortunately it was not further examined.

The officers' quarters varied in external length from 11.3m in Barrack 12 to 11.9m in

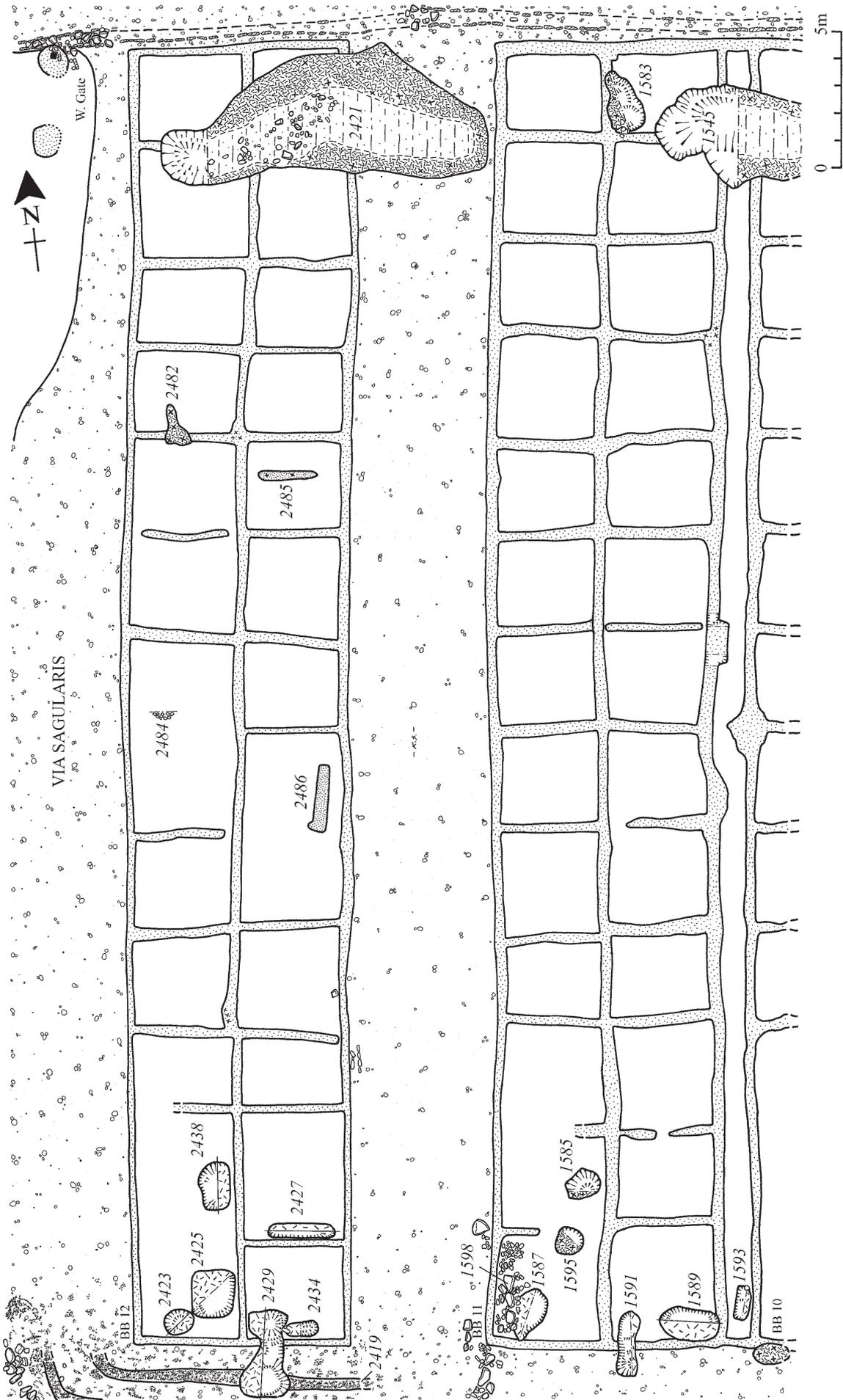


FIG. 6.7 Plan of Barracks 11 and 12

Barrack 11. Tripartite subdivisions approximating to those of the *contubernia* were maintained in both blocks, though with even greater variation of room width (2.7–4.9m) than was noted in the men's accommodation, particularly on the east side of Barrack 12. Several of the partition wall trenches were discontinuous or incomplete, and one on the west side of Barrack 12 was omitted altogether, creating one narrow room only 2.7m wide and one large room measuring 8.4m by 3.8m.

Like a number of other barrack blocks (e.g. above 6.1.1), the officers' quarters were distinguished by the presence of several pits, mainly located in the end rooms, and an increased concentration of finds (below 6.4.5). Most of the pits were related to the occupation of the barracks, including two latrine pits, though they also contained demolition material in their upper fills (below 6.4.4).

Most impressive was the latrine pit (2429) in Barrack 12. In fact, this consisted of two conjoined circular pits, one inside and one outside the building. Both were flat bottomed but the inner pit was smaller and shallower (FIG. 6.8e). They were connected together towards the top by a gully, which cut through the construction trench of the end wall of the barrack. The deeper, outer pit would appear to have functioned as an additional soakaway, the connecting gully facilitating overflow out under the barrack wall in the manner of the modern U-bend. Identification of these associated features as a slightly more elaborate type of earth-closet was confirmed by the presence in the primary waterlogged silt fill of the outer pit of large quantities of fig seeds (below 11.2.3). A similar arrangement, with the latrine inside the officers' quarters and the cesspit outside connected by a channel through the wall, was recorded in barrack 1 at Hod Hill (Richmond 1968, 80–1). That the latrine was still functioning at the time of the demolition of the fort was indicated by the presence of demolition material, including quantities of pottery, in its upper fill. There is some uncertainty about whether or not the outer pit had been covered. If it were not, it would certainly have interfered with passage around the *via sagularis* and the operation of the nearby cooking ovens, though the presence of an intersecting drainage gully (2419) cut into the *via sagularis* immediately outside the barrack wall is likely to have affected its efficient operation (below 7.4). Either some form of wooden covering had collapsed, accounting for the accumulation of demolition deposits in the upper filling, or the outer pit was a later addition to the latrine, cutting through the drainage gully, and had been left open. This sequence of events would also account for the need to provide a second gully mirroring the first, but positioned nearer to the ovens.

A pit (1591) in Barrack 11, though smaller and more elongated, had characteristics similar to latrine pit 2429: it was in the same general position in relation to the officers' quarters, though in a rear room rather than at the front; it straddled the end wall of the block; was slightly deeper on the outside of the building; and demolition material was confined to the upper fill. However, it was not deep enough to be waterlogged and no organic remains were found to confirm its identification as a latrine.

All of the other five pits in Barrack 12 also seem to have been contemporary with its occupation, though the precise nature of their use was not evident. Three clearly respected inner partition walls. One (2425) was square, relatively straight-sided and flat-bottomed, surviving to a depth of 0.76m (PLATE 6.5). The clean lower fills of humic silts suggest that it may have served some storage function, but the heavy concentration of burnt daub in the upper fill indicates that it was still open at the time the building was demolished. No organic remains were recorded in the samples taken. Similarly positioned adjacent to the median wall was a shallow (0.39m deep), flat-bottomed, subrectangular pit (2438) with more gently sloping sides. Examination of the section indicated a more complex history than was apparent on the surface (FIG. 6.8d). Lower fills of sandy silt and silty sand were overlain by clean sand and sealed by a thin layer of gravel, as if the pit had been deliberately infilled. It may originally have served some storage function. There were then traces of disturbance on one side, filled with a layer of slightly humic silty sand containing flecks of charcoal and burnt daub (2469), which were in turn overlain by demolition material. Finally pit 2427, which ran parallel to one of the east–west partitions, was narrow and elongated, sloping down to a maximum depth of 0.41m at its western end (FIG. 6.8a). Its homogeneous fill (2428) contained a slight admixture of charcoal

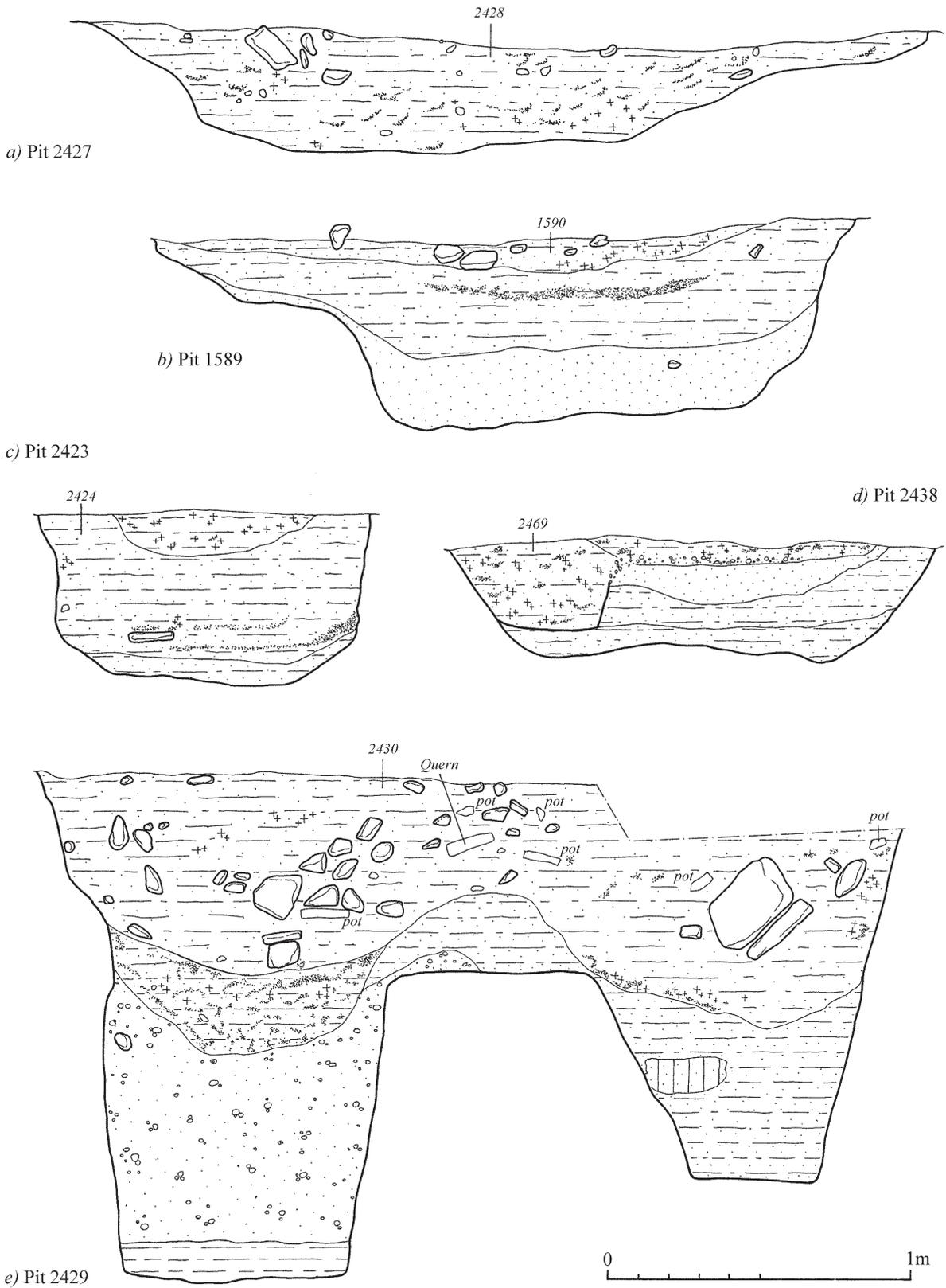


FIG. 6.8 Pit sections in Barracks 11 and 12: a. pit 2427, Barrack 12; b. pit 1589, Barrack 11; c. pit 2423, Barrack 12; d. pit 2438, Barrack 12; e. latrine pit 2429, Barrack 12



PLATE 6.5 Pit 2425 in Barrack 12 showing upper demolition fill; view north-west

and burnt daub indicating that it had been open, or perhaps its filling disturbed, during the demolition of the building. It has some of the characteristics of a urine soakaway pit, but is situated rather too close to the partition wall and might alternatively be interpreted as structural, either supporting some internal fitting or a repair.

Pit 2434 was similarly positioned respecting the line of the end wall. It was straight-sided, 0.52m deep, and primarily filled with sandy gravel. It may originally have been structural, perhaps housing some internal fitting related to the adjacent latrine. Once again, however, there were traces of burnt daub in its upper fill. Finally, a 0.57m deep, subcircular pit (2423) in the south-west corner of the block demonstrated no obvious relationship with any of the walls. However, it had straight sides and flat bottom, and showed a more complex sequence of fills broadly similar to those within pit 2425 (FIG. 6.8c). A bottom silty layer was overlain by thin bands of charcoal which were in turn sealed by a dump of clay-silt containing some burnt daub (2424), with a more concentrated deposit of burnt daub above it. Once again this would appear to be some form of storage or rubbish pit filled during the demolition of the building.

Other than the probable latrine pit already noted (1591), only two of the pits in Barrack 11 appear to have been in use during its occupation. Although impinging slightly on the inner edges of the construction trenches in the south-east corner of the block, pit 1589 had relatively straight sides and a flat bottom. It was 0.61m deep, the bulk of the filling made up of clean waterlogged sandy silt (FIG. 6.8b). The presence of demolition material only as a thin uppermost layer (1590) suggests that the pit had been filled prior to the abandonment of the fort. The most likely interpretation is that it originally served as some form of storage pit, which might serve to explain the absence of artefacts in the lower fills. Oval pit 1587 apparently just clipped the inner edge of the construction trench of the end wall, though this may be merely a reflection of the difficulty of discerning the precise limit of the pit at this point. Again demolition material was present only as a thin uppermost layer and an interpretation similar to that of pit 1589 seems most likely.

6.4.2 INTERPRETATION AND ANALOGIES

In terms of overall plan and layout, buildings 11 and 12 are sufficiently similar to Barracks 5–7 (above 6.1.2) to require only limited further discussion of their identification. Neither minor reductions in their average length and width compared to Barracks 5–7, nor the slight reduction in the proportion given over to the officers' quarters (TABLE 5.1), are statistically significant, since they are less than the variations in dimensions attested within each of the buildings.

The provision of ten *contubernia* would, on standard assumptions about the number of men per *contubernium*, give a barrack total of 80 and indicate that each block was intended to house a century of infantry troops. Moreover, none of the amorphous orange-red staining of the subsoil noted in the front rooms of a number of other barracks was identified, though one possible urine pit (2427) was recorded in the officers' quarters in Barrack 12. There is, thus, no positive evidence that these buildings should be identified as stable-barracks. However, that possibility must continue to be borne in mind on the basis of more circumstantial evidence: their general morphological similarities with stable-barracks 5–7; the possible geological explanation for the absence of urine stains in this part of the fort (above 6.1.1); and the presence of barley among the quantities of cereals from the adjacent ovens (above 11.2.3).

6.4.3 CONSTRUCTION AND RECONSTRUCTION

The recovery of structural information from Barracks 11 and 12 was somewhat restricted, since few of the construction trenches were excavated. Nonetheless it was reasonably clear, on analogy with other buildings examined in more detail, that post-trench construction had been used throughout. The post-trenches were in the main continuous except for some of the partitions in the officers' quarters or where the preservation or the visibility of features was poor. In several cases, however, the trenches for the partition walls stopped just short of those of the main longitudinal walls, suggesting that the former were secondary in the construction process, though the reverse appears to be the case in the partition wall between the sixth and seventh *contubernia* on the west side of Barrack 11. The end wall trenches of Barrack 11 continued unbroken beyond the line of the outer wall on the east side to form the end walls of the adjacent Barrack 10, though as already noted (above 6.3.3), the wall itself is unlikely to have been continuous. This, and the presence of road metalling overlying the construction trench of the end wall of Barrack 12 (FIG. 7.28), confirms that the laying out and digging of the foundations was undertaken at an early stage in the construction process.

As with a number of other barracks, some considerable irregularity is evident in the overall layout; not merely in the positioning of the partition walls, but in the main longitudinal walls also. Difficulty would have been experienced in erecting a straight wall line within all of the longitudinal construction trenches further emphasising the *ad hoc* nature of the construction. But unlike many other barrack blocks, the construction trenches for the main walls were not obviously consistently wider than those for the partitions, both varying from *c.* 0.2m to 0.6m. The section across the southern end wall of Barrack 12 indicated a depth of 0.6m (FIG. 7.28), but the relative depths of main and partition walls were not tested, and no post-impressions were recorded. Accordingly it is difficult to postulate any reconstruction directly based on the evidence from these two blocks, though it seems reasonable to assume that they would have been broadly similar to the other barracks investigated. However, the general scatter of daub and its inclusion in demolition pits confirms once more the use of wattle and daub construction for the walls.

6.4.4 STRATIGRAPHY AND PHASING

Evidence for more than one phase of use of this pair of buildings is restricted to Barrack 12. One additional east–west partition (2485) was inserted in the centre of the fifth *contubernium* at the front of the building. Though it did not impinge upon any of the primary wall trenches, it is assumed to be secondary because its position did not fit the primary layout of the barrack and it

contained demolition material. The only other possible hint of a second phase is where the median wall appeared to cut the partition between the sixth and seventh *contubernia* in Barrack 11, but this is more likely to reflect the sequence of construction, as in Barracks 3 and 4 (above 5.2.3), than a different structural phase.

In contrast to a number of other buildings within the fort, no major repairs were attested in either block. However, a single stretch of wall trench (2486) some 2.5m long ran parallel to, and 0.75m away from the front wall in the eighth *contubernium* in Barrack 12. Though this could have been part of some primary internal fitting, such features are not generally attested within the *contubernia* and some form of additional support for one of the main load-bearing walls seems a more likely interpretation. Similarly, feature 2427 in the officers' quarters could have been structural, perhaps representing a repair, though is interpreted as a pit because of its irregular profile (FIG. 6.8a). Finally, the trench for the outer wall midway down the east side of Barrack 11 contained a regular projection some 1.6m long, which almost doubled its width. Though there was no evidence of a cut, this may represent some later strengthening of the wall.

The evidence for the deliberate demolition of both barracks was fragmentary but quite clear. Burnt daub was noted at several points in their construction trenches, particularly concentrated in the main longitudinal wall trenches at the point of intersection with partition walls and in the single secondary partition in Barrack 12 (2485). This was presumably deposited where the filling had been disturbed by the removal of uprights. In addition, three of the five demolition pits recorded had been cut through construction trenches, presumably again in order to extract the timber uprights. In Barrack 12 a single unexcavated pit (2482) of irregular shape cut through the construction trench of the partition wall between the fourth and fifth *contubernia*. An irregular pit (1583) cut through the median wall in Barrack 11. It contained burnt daub and charcoal, but little in the way of artefacts. Two further circular pits in the officers' quarters (1585 and 1595) were of irregular profile and contained quantities of charcoal and burnt daub as well as a few other finds (below 6.4.5), suggesting that they were linked to the demolition of the building rather than its occupation. Demolition material was also recorded in the latrine pits (2429 and 1591) and in the uppermost fills of several storage pits (e.g. 1589, 2423 and 2438).

Following on from the demolition there is clear evidence of post-fort use of the area. The shallow U-shaped gully (1545) (FIG. 6.6), which ran approximately parallel to the *via principalis* across Barracks 9 and 10, continued across the eastern half of Barrack 11 where it butt-ended. After a gap of 6m the line was continued for a further 12m by a similar but predominantly wider feature (2421) extending across Barrack 12 to within 2.5m of the back of the rampart. The two gullies removed virtually all trace of the first partition wall in Barrack 12 and a section of it in Barrack 11, and even cut through the metalling of the 5m wide road between the two blocks. As already noted (above 6.3.4), this was not merely a demolition feature and had presumably served to separate off the south-west corner from the rest of the interior of the fort. Though it did contain demolition debris in its lower fill, including various artefacts (below 6.4.5), this was probably redeposited given the preponderance of such material on the site. The upper filling of the gullies, particularly towards the centre, was predominantly clean grey clay-silt, which suggests that it had accumulated more gradually. It also contained a scattering of larger stones, particularly evident in gully 2421 across Barrack 12, possibly representing further disturbed remnants of the postulated extensive cobble spread.

Indeed, slight traces of large cobbling were noted in the south-west corner of Barrack 11 (1598). It had been assumed during the excavation that this was contemporary with the building, for it did not seem to overlie the construction trenches. But cobbling did continue outside the barrack, where it overlay the *via sagularis*, and does appear partly to overlie one of the pits (1587) within the building, which itself contains demolition material. Moreover, considerable amounts of pottery were found interspersed between the cobbles, suggesting that it was not a primary deposit. On analogy with other small areas of cobbling noted in similar positions elsewhere within the fort (e.g. above 4.3.4; 5.2.4), it seems best interpreted as part of the widespread cobbling-over of the fort area after the demolition of the buildings. Slight traces of cobbling were also noted just overlying the construction trenches at the north-west corner of

Barrack 12 (FIG. 7.17). Since this was the south-eastern limit of a wider spread concentrating in the entrance passage of the West Gate, it is discussed more fully there (below 7.2.4).

6.4.5 ASSOCIATED FINDS

Barrack 11

Construction and occupation contexts

1580, construction trenches: 9 sherds of coarse pottery, 1 sherd of mortarium, 1 sherd of plain samian, 1 glass bead, 1 piece of brick

Demolition deposits

1584, fill of demolition pit 1583 overlying north end of block: 1 nail, daub, charcoal

1586, fill of probable demolition pit 1585 in officers' quarters: 1 sherd of decorated samian (D26), 1 nail

1596, fill of probable demolition pit 1595 in officers' quarters: 2 sherds of coarse pottery, 1 nail

1530, demolition spread across north end of block: incomplete small shallow copper-alloy pan (no. 64), 1 piece of unidentifiable copper alloy, 1 sherd of coarse pottery, 5 sherds of amphora, 1 sherd of late Neolithic/early Bronze age pottery, lava quern fragment, brick, fused burnt mass of clay/stone/bone

1590, upper demolition fill of pit 1589 in officers' quarters: 1 sherd of amphora, 1 fragment of glass bottle, 1 melon bead, 1 nail, daub

1588, upper demolition fill of pit 1587 in officers' quarters: 1 sherd of amphora, 3 sherds of decorated samian (D27 and 34), 2 from the same vessel as in the cobbling which overlay it (1598), charcoal of fir alder and hazel

1592, demolition fill of latrine pit 1591 in officers' quarters: 1 sherd of amphora, 1 piece of burnt animal bone, daub, charcoal

Post-fort contexts

1598, cobbling overlying pit 1587: 6 sherds of coarse pottery including type 126, 3 sherds of amphora, 8 sherds of samian, including 3 from the same decorated bowl (D34), 3 sherds of mortarium, 1 nail for fill of gully 1545 see 6.3.5

Barrack 12

Construction and occupation contexts

See 2430 below

Demolition contexts

1531, demolition spread across north end of block: Flavian dupondius/as (no. 54), bun-shaped copper-alloy washer (no. 112), copper-alloy pin (no. 95), 3 conical iron ferrules (nos 126 and 130), oval-sectioned iron rod (no. 205), spindle whorl (no. 237), base of shale vessel (no. 240), gaming counter, c. 50 sherds of coarse pottery, including types 21, 58, 83, 155 and 160, 25 sherds of amphora, 3 sherds of samian, including 2 decorated (D9 and D36), 4 sherds of mortarium, 2 from the same vessel, 12 fragments of mainly bottle glass, 1 melon bead, 1 nail, brick, 4 flints, vitrified stone

2424, upper fill of pit 2423: 4 sherds of coarse pottery including type 32, 2 pieces of bottle glass, 1 fragment of burnt animal bone, daub, charcoal

2426, upper demolition fill of pit 2425: 2 sherds of coarse pottery including type 39, daub

2428, demolition fill of pit or slot 2427 in officers' quarters: 1 sherd of coarse pottery, charcoal, daub

2430, upper demolition fill of latrine pit 2429 in officers' quarters: small iron tool, possibly a chisel (no. 139); 1 melon bead, 4 sherds of coarse pottery including type 122, 5 sherds of mortarium, 45 sherds of amphora, 2 fragments of bottle glass, over 100 fragments of lava quern, brick, 1 fragment of burnt bone, nails, daub, charcoal. A sample from the waterlogged material below this fill, but not accorded a separate context number, contained quantities of waterlogged plant material including fig seeds (below 11.2.3)

2435, upper fill of pit or slot 2434 in officers' quarters: 1 sherd of coarse pottery, 2 fragments of glass jug, daub

2469, fill of cut into pit 2438 in officers' quarters: 2 sherds of amphora, 1 piece of bottle glass, 1 nail, charcoal

Post-fort contexts

2422, fill of gully 2421 cutting the north end of the block: 1 sherd of mortarium, 2 sherds of amphora, 1 piece of bottle glass, 1 piece of burnt bone

CHAPTER 7

THE FORT – DEFENCES AND *INTERVALLUM* STRUCTURES

7.1 RAMPART AND DITCHES

7.1.1 DESCRIPTION

Rampart

Though ploughed flat, the remains of the rampart were detectable with varying ease around most of the fort perimeter, except along much of the north side where it had been completely removed. On average the base of the rampart was *c.* 6.5m wide, though the recorded width varied between 5.3m and 7.7m. This may be accounted for by a combination of factors: the difficulty of determining the original edges of the rampart as a result of slumping and spreading; the different materials used in different parts of the perimeter; and the fact that structures had been cut into the back of the rampart at various points, effectively reducing its width.

However, at the gateways an even greater width was noted, up to 11m, where the rampart projected internally creating inturned entrances. This additional thickening of the rampart continued for a greater distance on the left hand side of each gate, as observed from the interior of the fort, than on the right (FIG. 12.3). At both the East and South Gates this thickening came to an abrupt end some 16.5m from the gate passage, rather than merging more gradually back into the body of the rampart. While in the former case this sudden change in width might be explained by the cutting back of the rampart at this point to accommodate the *fabrica*, no such explanation can be applied to the latter. On excavation at the South Gate, the widening of the rampart was seen to have been the result of a deliberate addition to its rear face of a strip of mixed turf some 2.2–3m wide (FIG. 7.1a). Identification of this feature, and by analogy those at the East and West Gates, as an *ascensus* seems assured (see below).

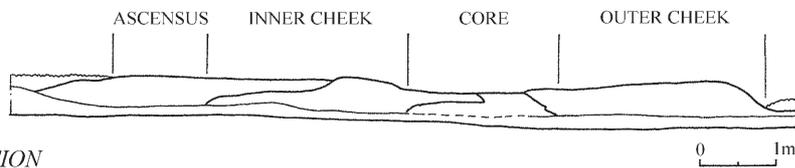
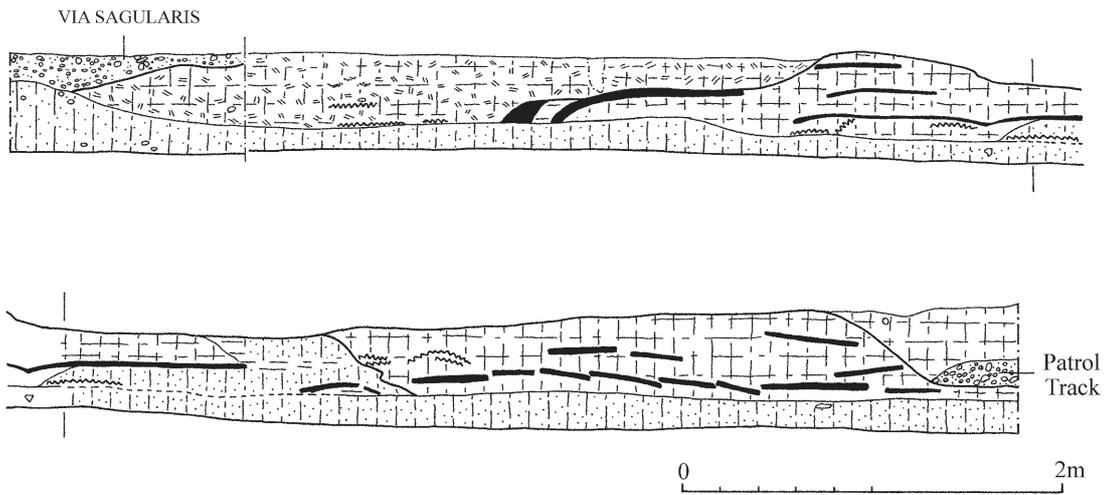
The rampart was best preserved on the south side where it had been protected to some extent from plough degradation by the proximity of the edge of the escarpment with its associated line of trees. Here the rampart had survived to a height of 0.4m and provided the best evidence for its construction (FIG. 7.1a).

The berm between the rampart and the inner ditch was quite wide, averaging some 5m wherever it was fully revealed around the south and east sides of the fort, though perhaps slightly narrower on the north. Where the surface was examined in detail it appeared to have been lightly metallated. The apparent absence of metallating along the north side may be explained by the heavy plough-truncation of surface deposits which would have removed any traces. Moreover, a layer of gravel (1472) in the fill of the inner north ditch (1470) may have derived from such a surface (FIG. 7.7b), though no traces of it were recorded sealed beneath the disturbed rampart material immediately to the south of the ditch.

Ditches

The fort was generously provided with ditches, though these were examined to their full extent only on the east side. Four parallel ditches between 2.75m and 4.7m apart were found on the

a) SOUTH GATE



b) NORTH GATE

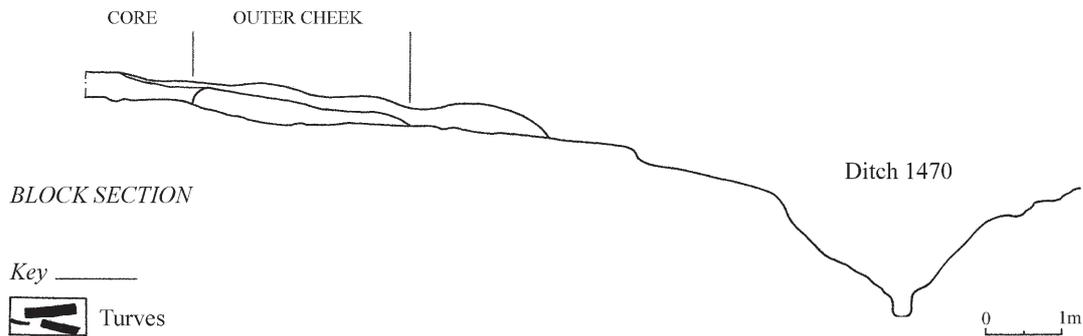
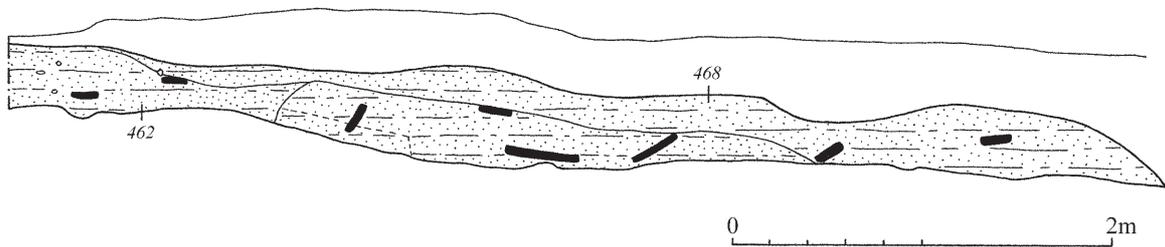


FIG. 7.1 Rampart sections: a. at South Gate; b. at North Gate, with diagrammatic interpretations

south side of the road outside the East Gate (FIG. 7.2), though only the inner one (891) showed any sign of having continued around the south-east corner. The next ditch (894) stopped just short of that corner, but the outer two (918 and 1729) covered only between just over half and three-quarters of the distance from the road, though their shallow depths and reduced widths at their southern ends (FIG. 7.3; TABLE 7.1) suggests that they may have suffered some truncation from later ploughing. The silt-clay through which they were dug impeded drainage so that they tended to hold water, as was experienced during the excavation (PLATE 7.3) and confirmed by their partially waterlogged fills (PLATE 7.1). A large but shallow, amorphous pit (1276) just beyond the southern end of the outer ditch seems best interpreted as a tree hole. However, the presence of Roman artefacts within its fill, including a Republican *denarius*, suggests that the tree was removed by the Roman army during the laying out of the defences of the site and the hole partly filled with rubbish.

A rather different arrangement was apparent on the north side of the road outside the East Gate (FIG. 7.4). Two parallel ditches (1702 and 1704), some 3m apart, continued the alignment of the inner two to the south. The third ditch (1760), a further 5.8m away, was represented by only a short segment 4m long and there was no fourth ditch. Instead, a ditch (1762) of rather variable character ran at right-angles and joined the three ditches some 4–5m from their butt ends, itself continuing east and coming to an end just short of the limit of excavation. Though the relationship between this cross ditch and the others varies, the general configuration seems to be contemporary (see below).

The arrangement of the defences south of the road on the west side of the fort mirrored that on the east, with at least four parallel ditches between 3.2m and 5.7m apart. However, minor differences in layout were apparent: the second and third ditches (1182 and 611) continued at least as far as the south-west corner (FIGS 7.5 and 7.7), and the third and outer ditches (611



PLATE 7.1 Waterlogged base of inner east ditch 891 with surviving organic material; view south

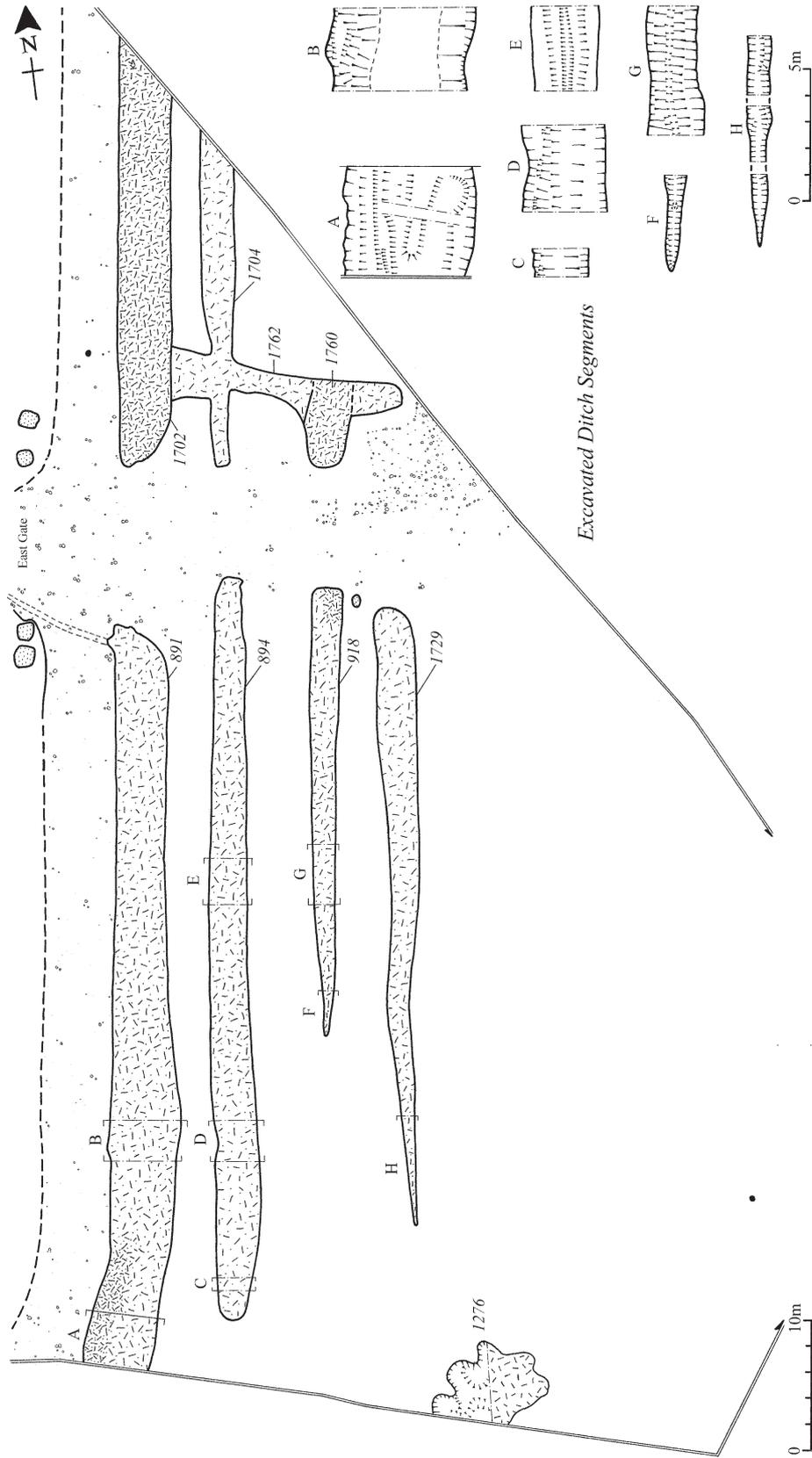


FIG. 7.2 Plan of the defences to the east of the fort

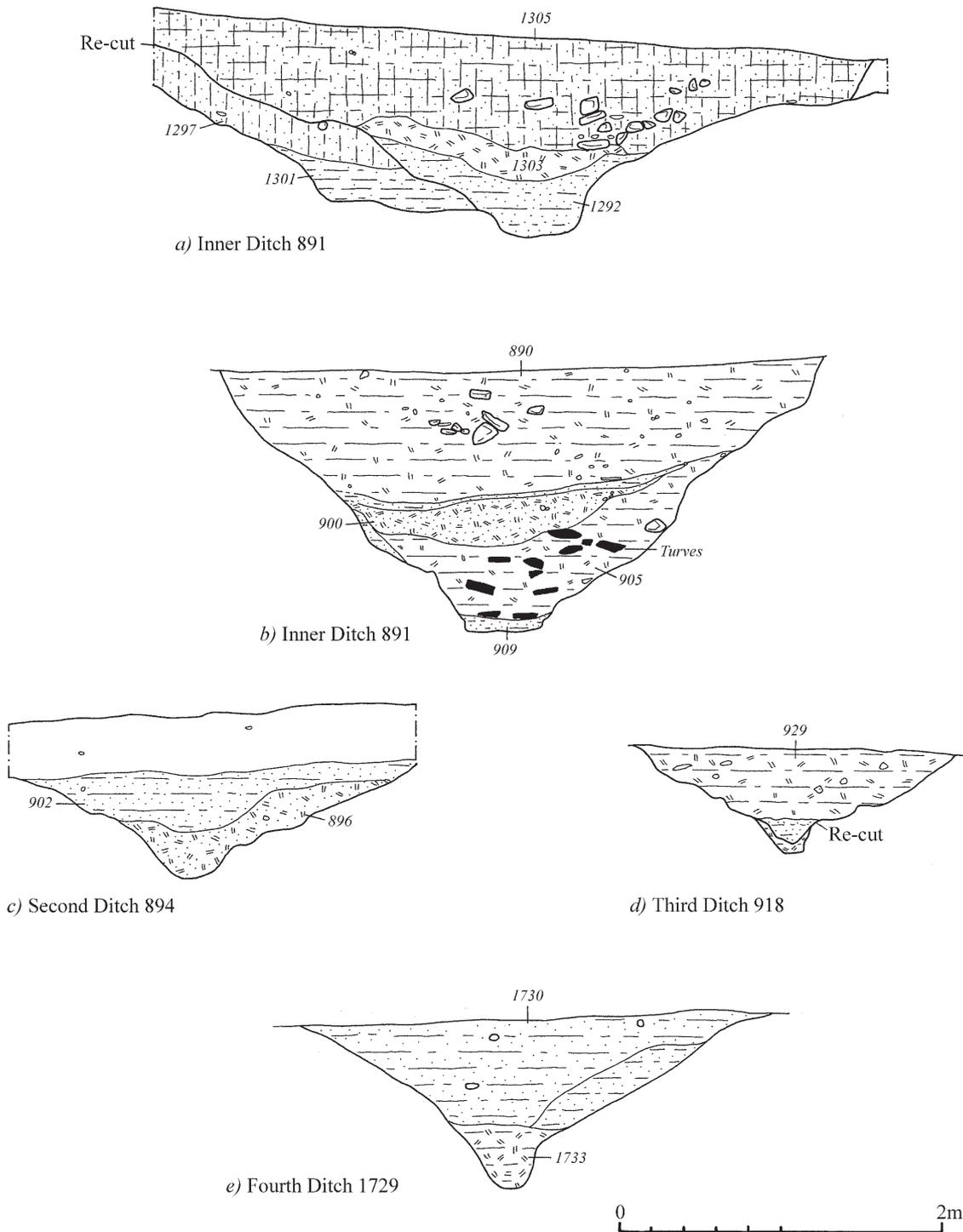


FIG. 7.3 Perimeter ditch sections, east side: a. recut inner ditch (891) at the southern end (see FIG. 7.2); b. inner ditch (891) at butt end south of gate; c. second ditch (894) south of gate; d. third ditch (918) south of gate; e. fourth ditch (1729) south of gate (for location of b–e, see FIG. 7.4)

and 614) were conjoined at their northern ends by a slightly shallower transverse ditch (FIG. 7.6). The same general pattern of ditch provision is assumed to the north of the road, though only the existence of the outer three ditches was confirmed. These were some 3.5–4.5m apart, their alignments slightly offset from their counterparts on the other side of the road. The second and third ditches continued around the north-west angle of the fort (FIG. 8.2), though with a 6m gap in the former as it rounded the corner. The inner ditch is presumed to have

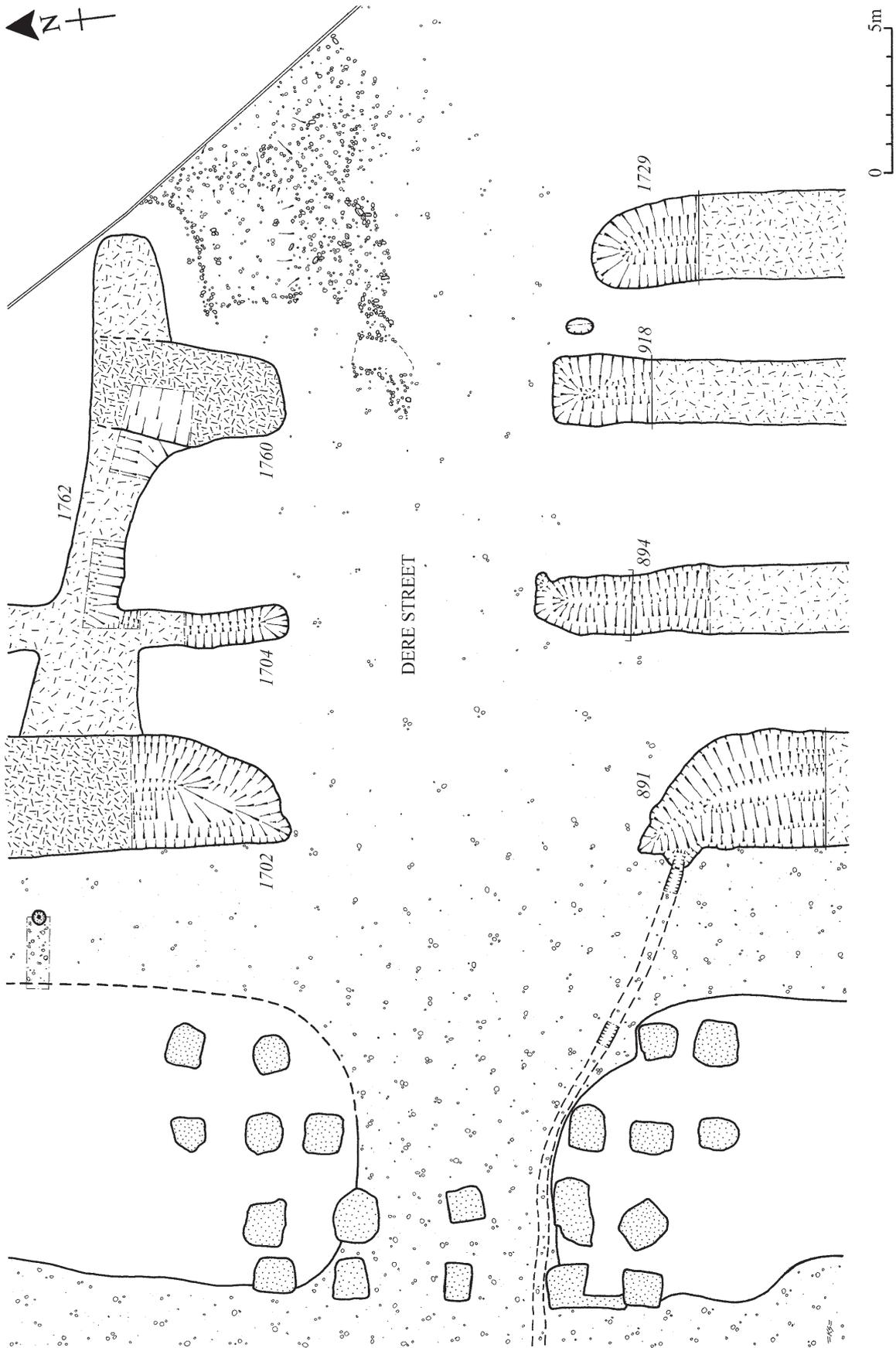


FIG. 7.4 Plan of eastern approaches: road and ditches outside the East Gate

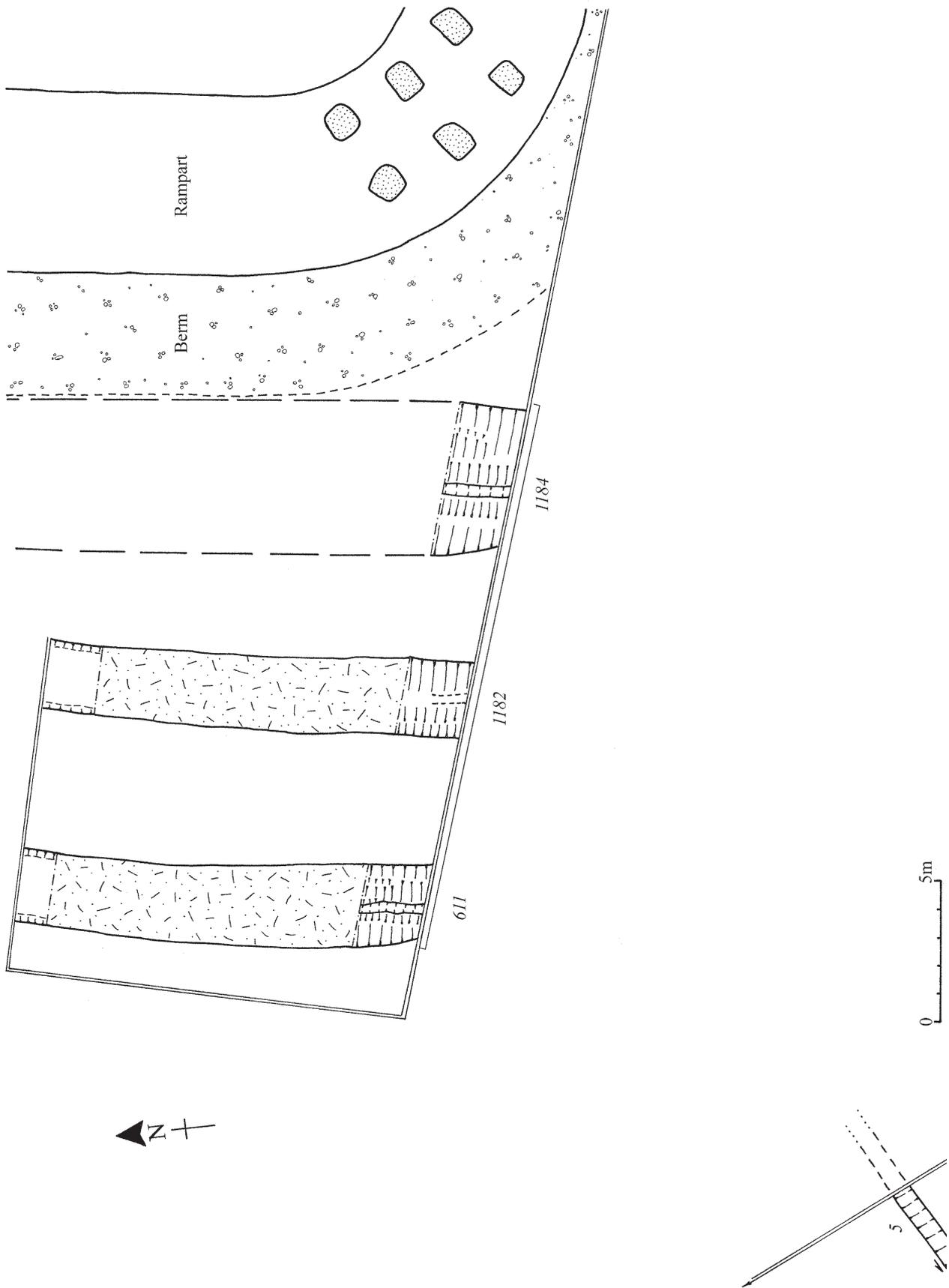


FIG. 7.5 Plan of defences at south-west corner and southern annexe ditch

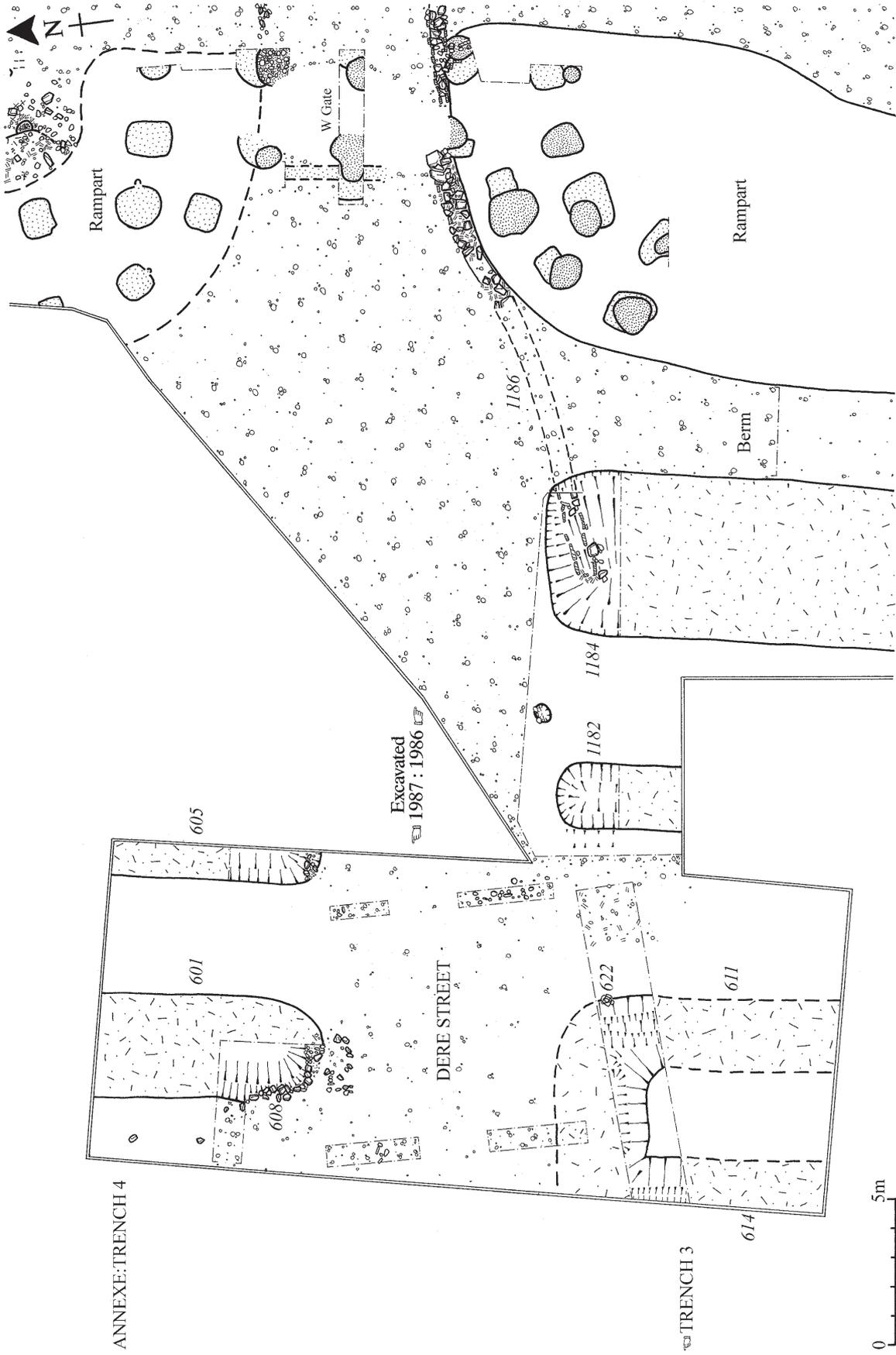


FIG. 7.6 Plan of western approaches: ditches outside the West Gate

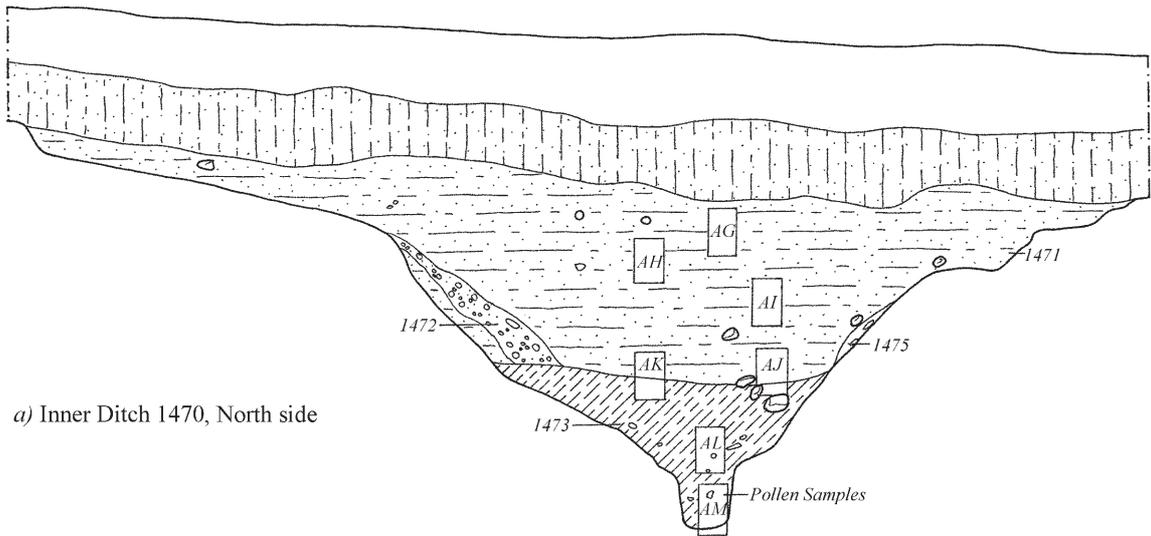
TABLE 7.1: DITCH DIMENSIONS

Ditch location	Context	Width (m)	Depth (m)	Profile	Fig.
<i>Inner</i>					
E side south	891	3–3.85	1–1.65	broad V-shape with basal slot	7.3a.b
E side north	1702	3.7	1.35	broad V-shape	
W side south	1184	5–5.7	1.3–2.15	broad V-shape with basal slot	7.7b
N side	1470	5.75	2	broad V-shape with basal slot	7.7a
<i>Second</i>					
E side south	894	2–2.8	0.65–0.95	broad V-shape with basal slot	7.3c
E side north	1704	1.15–2.5	0.4	broad V-shape with basal slot	
W side south	1182	2.4–3.1	0.5–0.8	broad V-shape with basal slot	7.7c
W side north	605	1–1.6	0.3–0.75	V-shape/broad U-shape	
<i>Third</i>					
E side south	918	0.75–2.1	0.15–0.85	broad V-shape with basal slot	7.3d
E side north	1760	2.8–3.4	0.65	U-shape	
W side south	611	2.4–2.75	0.85	broad V-shape with basal slot	7.7d
W side north	601	1.9–3.5	0.55–1.1	V-shape occasionally with basal slot	
<i>Outer</i>					
E side south	1729	0.95–2.85	0.33–1.05	broad V-shape with basal slot	7.3e
W side south	614	–	0.8	V-shape with basal slot	
W side north	1272	2	0.6	broad V-shape	
<i>Transverse</i>					
E side north	1762	1.8–4	0.9	broad V-shape with basal slot	

continued also, though only limited sections were exposed on the north side of the fort (FIGS 7.8 and 7.21), but the outer ditch did not, for there was no sign of it in annexe Trench 6. Its position along the northern side of the fort may have been taken up by the continuation of the main annexe ditch, on the assumption that its known alignment continued eastwards.

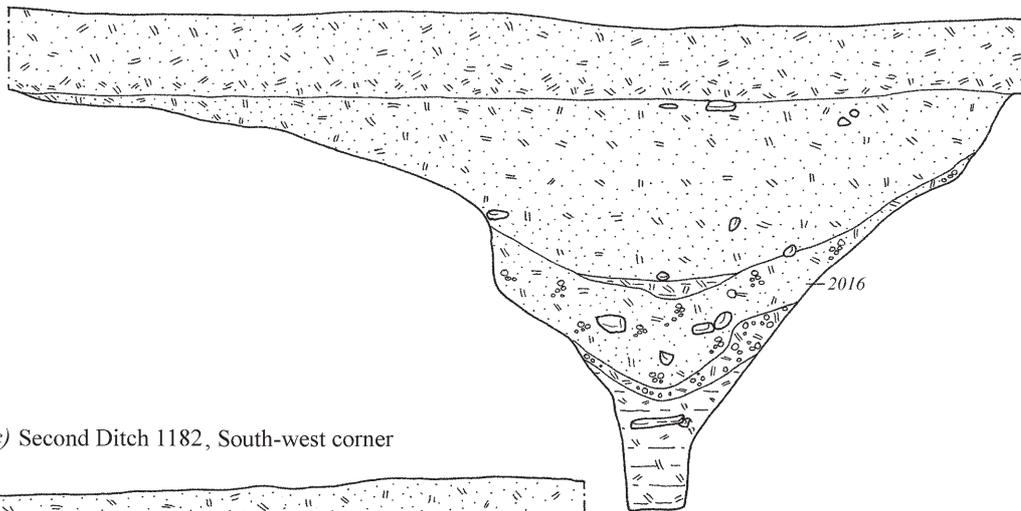
Finally, although no investigation took place of the defences on the south side of the fort, there was no clear indication that the ditches on the west side were coming to butt ends as they approached the south-west corner (FIG. 7.7b) even though two of them appeared to be narrowing slightly (FIG. 7.5). Moreover, the slight curvature of the inner ditch at the south-east corner (FIG. 7.2) might be taken to suggest that it was continuing. However, the steep slope to the south of the fort would seem to have obviated the need for much in the way of defensive provision on that side.

The inner ditch, at between 3m and 5.75m in width (FIG. 7.7; TABLE 7.1), was consistently the largest of those surrounding the fort, usually by a considerable margin, though in part this may have been the result of later recutting (below 7.1.4). Outside the East Gate its butt ends were slightly splayed, hinting at the so-called ‘parrot’s beak’ style of entrance frequently seen in Flavian sites in Scotland (FIG. 7.4) (Hanson 1987, 178), though this feature was not repeated at the West Gate where the one inner ditch butt end examined was square like most of the outer ditches. The latter were generally 2–3m wide (FIGS 7.3a–e and 7.7a–d; TABLE 7.1). In some places lesser dimensions were recorded, though this is likely to have been the result of later truncation.

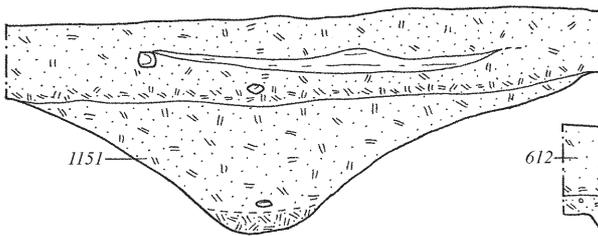


a) Inner Ditch 1470, North side

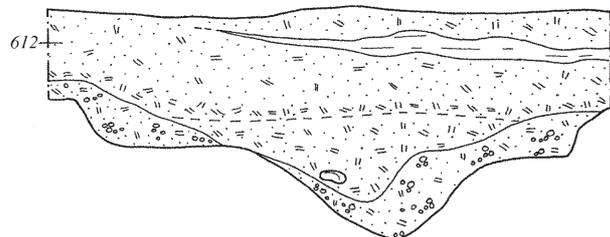
b) Inner Ditch 1184, South-west corner



c) Second Ditch 1182, South-west corner



d) Third Ditch 611, South-west corner



BLOCK SECTION



FIG. 7.7 Perimeter ditch sections, north and west sides: a. inner ditch, north side (1470); b–d. inner three ditches (1184, 1182, 611) at south-west corner, with diagrammatic interpretation

7.1.2 INTERPRETATION AND ANALOGIES

Rampart

The provision of earthen ramparts around auxiliary forts in Britain was the norm in the first century A.D., the choice of material dictated by local availability (Jones 1975, 68). So too at Elginhaugh, where the use of different materials at different points around the perimeter appears to reflect changes in the underlying geology (below 11.5). The use of turf to revet the front and rear of ramparts is frequently attested, though less so the use of clay, while ramparts entirely constructed of clay are also common (Jones 1975, 80–1). In the former case each revetment usually takes up approximately one third of the total width of the rampart, as is broadly the case at Elginhaugh, and the overall average width of the rampart there complies with the norm of 6m.

Though the provision of access to the walkway on top of the rampart would have been a basic requirement, the archaeological evidence for the nature, frequency and positioning of *ascensus* has not been studied in any detail. For earthen ramparts they appear to fall into two types: short extensions at right-angles to the rampart, sometimes founded on stone or cobble bases, presumably providing the grounding for steps, and longer turf or earthen ramps running parallel with the rampart. The examples at Elginhaugh fall into the latter category with contemporary local parallels at Strageath (Frere and Wilkes 1989, 17, 26–7), possibly Bochastle (Anderson 1956, 44), Oakwood (Steer and Feachem 1952, 93, fig. 5), and further afield at Carlisle (Frere 1985, 274–5) and Wroxeter (Webster 1991, 127). Where quoted, widths of *c.* 2–3m are indicated.

At over 4m the berm was considerably wider than the norm of 1.5m. The provision of a metalled surface on the berm may indicate the presence of a patrol track immediately outside the rampart. Similar provision was made at Inchtuthil (Pitts and St Joseph 1985, 68) and Pen Llystyn (Hogg 1968, 111–13), and appears to be associated with wider berm widths (Jones 1975, 105). The significance of a single post-hole in the centre of the berm on the north side of the East Gate is unclear, though there may have been an intention to control access to the patrol track.

Ditches

There is considerable variety in the provision of ditches around auxiliary forts. Single, double and multiple ditch systems are all attested, with little obvious pattern to the provision. In Flavian Scotland double ditches seem to have been the norm. There are very few forts which were entirely surrounded by a single ditch, examples being known at Easter Happrew (Steer 1957, 97) and at the legionary fortress at Inchtuthil (Pitts and St Joseph 1985, 71), though in some cases single ditches were provided around large parts of the perimeter, as at Fendoch (Richmond and MacIntyre 1939, 114). Multiple ditch systems are not common, though triple ditches along at least one side of the fort are attested at Cargill, Doune (Maxwell and Wilson 1987, 16–17), and Stracathro (Robertson 1977, 66). Some years ago it was suggested that there were no definitely Flavian examples of a system with more than three ditches (Jones 1975, 112), though a fourth ditch is known to have been provided on the east side at Cardean (Robertson 1977, 67). Thus Elginhaugh seems to have been more heavily defended than was usually the case. What significance, if any, this has for relations with the local population is difficult to say, all the more so when there is some uncertainty about whether or not this arrangement was primary (see below 7.1.4). At 28m the overall depth of the defences is comparable with that at Hod Hill, thought to relate to the range of effective fire-power from the fort (Richmond 1968, 68–9). This is probably just beyond the accurate range of hand-thrown weapons. It may be no coincidence, therefore, that Elginhaugh has produced evidence of the presence in the fort of a light catapult (below 10.5).

One further anomaly within the ditch system requires some comment. The shallow cross-ditch (1762) running parallel to the road on its north side immediately outside the East Gate is an unusual feature. It may be no more than an additional drainage provision for the road as it

approaches the fort up a slight slope. However, it is not clear that this would have been any more effective than a continuation of the standard ditch pattern seen on the other side of the road. It may, therefore, indicate the presence of a second, smaller annexe on this side of the fort, the butt end of the ditch and the widening of the road at this point demarcating an entrance gap (FIG. 7.4). It was not possible to test this hypothesis on site as it coincided with the limit of the area available for excavation. Small annexes attached to only one half of one side of a fort are commonly attested, with several Flavian examples from Scotland, and were usually entered through a gap in their defences close to the gate of the fort (Sommer 1984, 18). Nor is the provision of more than one annexe without precedent, for broadly contemporary examples are known at Dalswinton and possibly Drumquhassle, and examples of later date at Newstead, Lyne, Camelon and Oxton fortlet.

7.1.3. CONSTRUCTION AND RECONSTRUCTION

Rampart

In the best preserved section to the east of the South Gate the rampart was revetted with turf cheeks 2.6–2.8m wide at both front and rear. Turf lines were visible indicating up to three layers surviving (FIG. 7.1a), though this was not enough to establish the angle of batter. The core of the rampart was infilled with mixed soil and turf. It was some 2m wide at the base, but considerably reduced in width primarily by the overlapping of the inner cheek. Elsewhere on the south side of the fort where it was visible in plan the width of the turf revetment varied slightly, the inner cheek measuring *c.* 2–2.4m and the outer 1.9–2.6m in width. On the west side of the fort to the south of the main road, however, the rampart appeared to consist entirely of clay (e.g. PLATE 7.9). Clay also seems to have been used on the east side in the area of the *fabrica*, though probably not along the north side where turf blocks were visible in section across the disturbed remains of the rampart (FIG. 7.1b). The presence of a shallow slot (1601) 0.1m wide and of similar depth recorded in one short section at the back of the rampart in the north-east corner (FIG. 7.8) may represent an attempt to provide additional structural support in an area potentially prone to problems of stability because of the drainage pattern of the fort.

There was very little sign of any strapping layers being provided, though the poor preservation of the body of the rampart was not conducive to the survival of such evidence. However, two bands of charcoal *c.* 0.2m wide and 0.08m deep (1025) were recorded in a very limited section partly beneath one of the ovens (95) in the western *retentura* which cut into the back of the rampart (FIG. 7.31). Despite the indications of short returns at each end of the inner band, these seem more likely to represent timber strapping within the turf cheeks of the rampart than some ephemeral structure constructed on sleeper beams. The secondary facing of the rampart, added at both East and West Gates (below 7.2.4), was founded on a base of water-worn cobbles.

The evidence from the rampart at Elginhaugh is not sufficient to indicate the angle of either the front or rear revetment thus making difficult any calculation of the height to which it rose. Turf-revetted ramparts tended to have a front batter of between 65° and 75° (Jones 1975, 70). An angle of 67° was observed at the front of the contemporary Flavian rampart at Strageath (Frere and Wilkes 1989, 17). Though short vertical faces are attested, which distort the statistics, the overall angle of batter at the rear of such ramparts was probably rather less, perhaps of the order of only 50° by calculation from one well-preserved section through the Antonine Wall (Hanson and Maxwell 1986, 81). Assuming a walkway *c.* 1.8m wide, this would give a rampart height of approximately 3.7m, only slightly higher than the estimated minimum height of the gateway (below 7.2). Increasing the width of the walkway to 2.2m, in line with the attested width of the *ascensus*, would reduce the height of the rampart to *c.* 3.5m.

Approximate calculations based on the average width of the turf cheeks, estimations of the height of the rampart and its overall length, less the west side and half of the east side which seem to have been built with clay,¹ suggest that its construction would have required turf to be

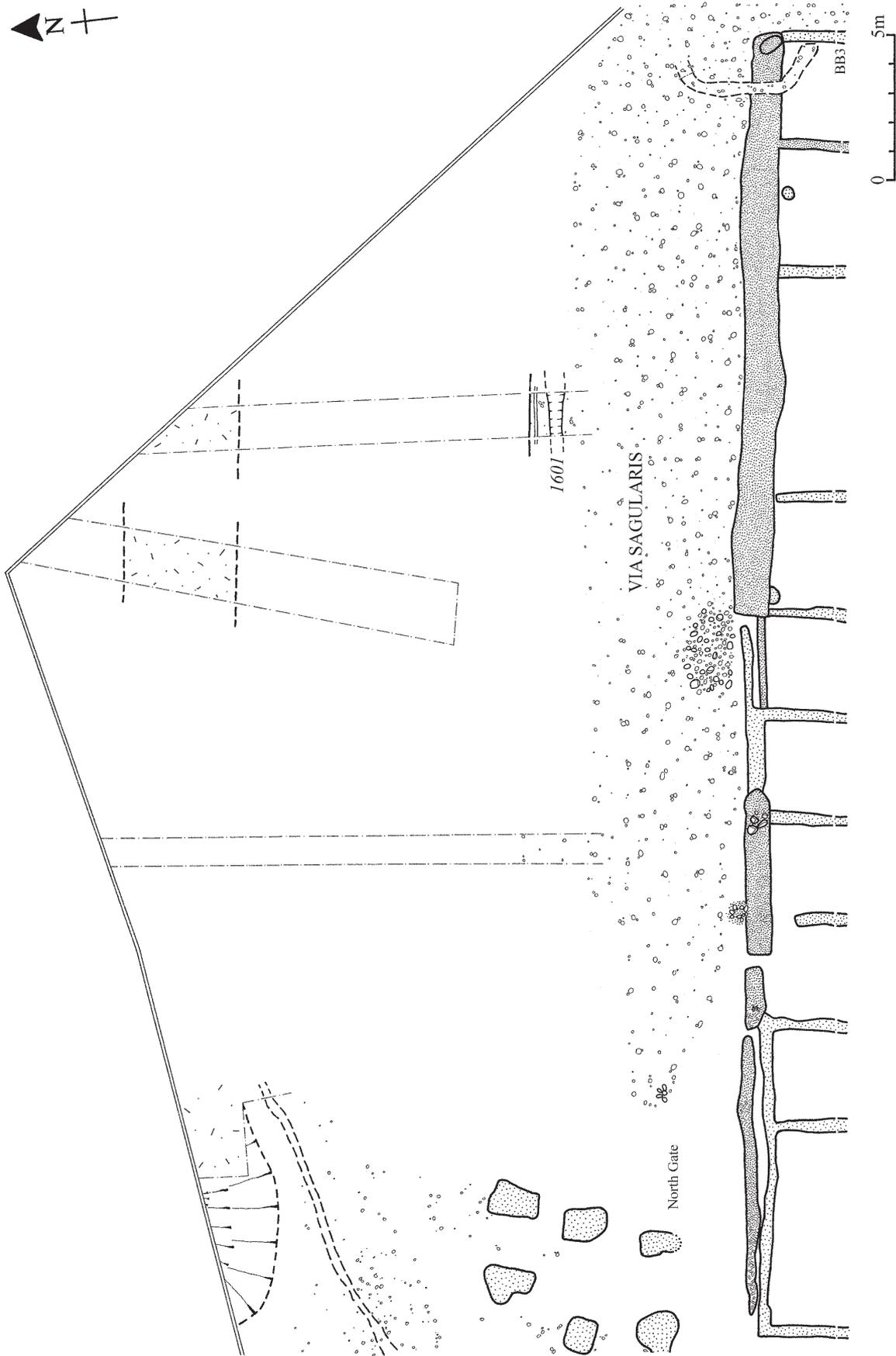


FIG. 7.8 Plan of north perimeter (east)

cut from an area of approximately 2.5ha. It may be no coincidence that this area is almost exactly equivalent to that covered by the fort and its ditches. It might be thought that there would have been considerable advantage in leaving the turf in situ as a working surface during the construction process, and certainly the ground beneath the roads does not seem to have been stripped of its cover. On the other hand the limited sections cut through the rampart (FIG. 7.1) suggest that the turf had been removed from beneath it, even though this seems to make little structural sense.

Ditches

Most of the ditches had standard, broad V-shaped profiles with basal slots or channels, though in few cases were these sharply defined (FIGS 7.3 and 7.7). The significance of these slots remains uncertain, but seems best interpreted as a constructional feature linked to the need to allow room to manoeuvre when digging out the bottom of a steep-sided ditch, the slots perhaps augmented by the later regular cleaning out of any silts which had accumulated in the bottom of the ditch (Jones 1975, 36). That the slots were deliberately designed to augment the defensive potential of these ditches, by increasing the likelihood of an assailant breaking an ankle as he crossed one, has little to commend it (*contra* Webster 1985, 174), for a sharply defined V-shape could have had the same effect. Nor does such an interpretation sit well in relation to a feature which would have made access to the bottom of the ditch easier.

Allowing for the numerous approximations and assumptions inherent in such a calculation, the material dug out from the inner ditch would have been sufficient to provide the infilling for the core of the rampart. It seems reasonable to envisage the two activities taking place simultaneously, the material from the ditch being deposited between the turf cheeks of the rampart as they were raised. The material dug out during the construction of the outer ditches would then have been spread out in the gaps between them, serving in the process to augment their depth.

There was some indication of an attempt to minimise erosion of the sides of the ditches. A thin layer of clay was recorded in one section on the bottom of the second ditch on the east side of the fort (894), which may have been the remains of a clay lining. These are only occasionally attested, though they may have been more frequent in areas with less stable subsoil than the evidence suggests (Jones 1975, 108). The provision of a revetment made up of three to four courses of cobbles (608) at the top of the butt ends of the second and third ditches to the north of the West Gate (601 and 605) (FIG. 7.6) may also have been designed to reduce the effect of erosion, particularly in an area which seems to have been subject to quite heavy traffic (below 8.2)

7.1.4 STRATIGRAPHY AND PHASING

Rampart

Only one phase of rampart was evident except at the East and West Gates, where the entrance gap had been narrowed by the addition of an outer face. This occurred on both sides of the rampart at the East Gate, though only on the south side of the West Gate. The secondary face varied in width from 2.5m to 3m and was based on a platform of large cobbles (below 7.2.4). The association of the narrowing of these gates with the secondary cobbling which extends over parts of the internal area of the fort suggests that these extensions to the rampart relate to the phase after the fort buildings had been demolished. Indeed, at the West Gate the new inner face of the rampart (1160) overlay the infilled blocking ditch (2087), which in turn is clearly later than the second phase of gate construction (FIG. 7.17).

There was no evidence that the rampart had subsequently been demolished. Though some of the ditches showed signs of deliberate backfilling, presumably on demolition of the interior buildings, the material used need not have come from the rampart (below). Moreover, though turf was occasionally recorded in the ditches, it was confined to the upper fills and analysis of a

possible turf from the inner ditch on the east side (891) suggested rather that it represented the collapse of part of the side of the ditch (below 11.2). The upper layer of rampart material (468) in the section through both rampart and ditch adjacent to the North Gate (FIG. 7.1b) seems likely to represent collapse augmented by subsequent ploughing. It sealed demolition material (469) which had spread over the back of the rampart.

Ditches

There are slight indications that the ditches represent two phases of defensive provision. The general characteristics of the outer ditches are consistent, but contrast sharply with those of the inner ditch which is much wider and deeper. Indeed, its size is consistent with it being the sole enclosing ditch, for multiple systems tend to utilise smaller ditches (Jones 1975, 112; Johnson 1983, 48), as is well illustrated by the outer examples at Elginhaugh. What is uncertain, however, is whether the outer ditches were a later addition to an original single ditch, or whether the width of the inner ditch was increased in a secondary phase, either incidentally, as it is likely to have been subject to regular cleaning, or deliberately, to augment or replace the original multiple system. In the annexe the third ditch to the north of the West Gate (601) cuts an earlier pit (1281) containing Roman finds (below 8.3), which would support the suggestion that the outer ditches were a slightly later addition. On the other hand, the inner ditch had clearly been extensively recut along much of the east side of the fort. At the south-east corner the recut inner ditch deviated entirely from the original alignment (PLATE 7.2), while its profile as it approaches the East Gate is suggestive of a more extensive recutting process (FIG. 7.3a and b). Indeed, the whole of the inner ditch on the north side of that road (1702) seems to have been recut for, though the relationship was not tested by excavation, it clearly cut the transverse ditch (1762). The third ditch on the east side of the fort (918, 1760) had also been recut at its butt ends on either side of the road (FIG. 7.2).

There was some suggestion that the ditches had been cleaned out during the life of the fort, for in many cases only the channels at the bottom of the ditches were silt filled. In other cases, however, the ditches had been allowed to accumulate amounts of silt or rubbish. The southern



PLATE 7.2 Recut inner ditch (right) at south-east corner deviating from original ditch line; view south

end of the inner ditch (891) on the east side had silted up considerably before it was recut (FIG. 7.3a); the second ditch (1704) to the north of the road and the transverse ditch (1762) had silted up almost completely before the latter was cut by the recutting of both the inner and third ditches (1702 and 1760 respectively); while the inner ditch on the north side of the fort (1470) contained up to 0.8m of waterlogged organic debris (1473) at the bottom (FIG. 7.7a). Both the plant and insect remains from the inner north and east ditches and the outer east ditch suggest that they contained water for a period of time during the life of the fort.

Most of the ditches seem to have undergone a gradual process of infilling, their fills consisting of washed-in silts and sand with a varying clay content (FIGS 7.3 and 7.7). The most consistent exception to this pattern was the inner ditch where there were frequent indications of some deliberate backfilling. At the south-west corner and the butt end outside the West Gate, mottled sandy clay and lenses of gravel suggested the deliberate deposition of some material, while the variety of artefactual material recovered from the butt end outside the East Gate was presumably deposited during the demolition of the interior buildings, an interpretation supported by the presence of occasional lenses of burnt material. The homogeneous nature of the uppermost fill of the inner ditch, often characterised by its greater loam content, looks like material ploughed in at a much later date. Such an interpretation is supported by the more abraded nature of the pottery sherds recovered from these deposits.

7.1.5. ASSOCIATED FINDS

Rampart

As might be expected, very few finds were recovered from the make-up of the rampart. In some cases, as at the West Gate, those that have been so attributed probably relate to secondary activity. In most other cases the extensive disturbance of the rampart must be borne in mind.

- 155, 1055, 1095 and 1098, rampart on north-west side of fort: 1 sherd of coarse pottery, type 140, 1 cattle tooth, 3 flints
- 462, rampart core by North Gate: 3 sherds coarse pottery, including type 59, 1 nail, pieces of structural ceramic, 3 flints
- 468, collapsed rampart by North Gate: 3 sherds coarse pottery, including type 177
- 469, demolition material over back of rampart by North Gate: 1 unidentified fragment of iron, 2 sherds of plain samian, 1 sherd of mortarium, 1 sherd of coarse pottery, charcoal, burnt daub
- 676, rampart by north-west corner: 1 sherd of coarse pottery type 60, charcoal
- 768 and 1726, inner rampart cheek at north-east corner: 2 sherds of coarse pottery, 2 sherds of samian, including 1 decorated (D6), 1 piece of bottle glass, 1 yellow agate bead (no. 242)
- 1136, rampart at West Gate: copper-working slag, cinder, iron concretion, 2 flints, 1 sherd of coarse pottery, type 140, 1 nail, fragment of lava quern, 1 piece of animal bone
- 2253, inner rampart cheek on east side: 1 nail
- 2680 and 2681, rampart by South Gate: several sherds of coarse pottery, 1 sherd of mortarium, 3 pieces of flint
- 2700, contemporary ground surface by South Gate: 1 fragment of iron, 16 sherds of coarse pottery, 9 sherds of amphora, 2 sherds of mortarium, 1 fragment of lava quernstone, 7 pieces of flint, 3 fragments of daub, charcoal

Ditches

Because of their frequently waterlogged state, the ditches provided a rich source of ecofacts (below 11.1 and 11.2) and were particularly rich in organic finds, notably wood and leather (below 10.8, 10.9.1 and 11.3.2), in addition to the usual inorganic artefacts in rubbish and demolition deposits.

East side, inner ditch 1702 north of the gate

1706, upper fill: 4 sherds of coarse pottery, including type 58, 2 sherds of amphora, 1 glass counter

1707, upper demolition fill: some waterlogged plant remains mainly in the form of environmental indicators, 2 sherds of coarse pottery, including type 76, 1 sherd of mortarium, 1 piece of bottle glass

1708, lower demolition fill: 2 fragments of leather, 1 sherd of coarse pottery type 8

East side, inner ditch 891 south of the gate

890 and 892, uppermost fills: over 20 sherds of coarse pottery, including types 67, 156 and 206, over 20 sherds of amphora, 1 sherd of plain samian, 1 piece of glass bottle, brick, lava quern fragments, numerous pieces of animal bone, mainly burnt, including teeth of sheep/goat and cattle, 1 piece of flint, fragment of wood

899 and 909, basal fills: well-preserved waterlogged plant remains mainly in the form of environmental indicators (below 11.2.4), various fragments of leather, 3 from shoes, quantities of wood including offcuts of oak laths and planking, tent pegs, wooden bung, 10 sherds of coarse pottery, including types 102 and 155, 1 melon bead, 1 piece of flint, several cattle teeth, charcoal

900, upper demolition fill: some waterlogged plant remains mainly in the form of environmental indicators (below 11.2.4), hazel twigs and offcuts of alder, large piece of tent leather, 1 sherd of coarse pottery, numerous fragments of burnt animal bone, 1 piece of flint

905, lower demolition fill: well-preserved waterlogged and carbonised plant remains mainly in the form of environmental indicators (below 11.2.4), but also including small amounts of cereals, both wheat and barley, and bran fragments, numerous fragments of shoes, 1 tent piece and other leather fragments, offcut of alder plank, oak tent-peg, piece of *imbrex*, cattle teeth

1292, basal fill of recut at south-east corner: fragment of a broad-bladed iron spearhead (no. 118)

1297 and 1304, middle fill of primary cut at south-east corner: 1 sherd of coarse pottery, fragment of lava quern, fragments of animal tooth

1301, basal fill of primary cut at south-east corner: 9 sherds of coarse pottery, including type 160

1305, uppermost fill of recut at south-east corner: *as* of Domitian (no. 44), several sherds of coarse pottery, including types 50 and 108, 1 sherd of amphora, 2 pieces of brick, 4 nails, iron concretion

1302, 1303 and 1309, middle fills of recut at south-east corner: 1 sherd of coarse pottery, 2 sherds of amphora, 3 pieces of tile, daub, cattle tooth fragments, charcoal of hazel, hawthorn, birch and willow

East side, other ditches and associated features

896, bottom fill of second ditch (894) south of gate: fragment of lava quern, 3 sherds of amphora

902, upper fill of second ditch (894) south of gate: 1 piece of flint, 1 melon bead, 1 piece of tile

908, middle fill of second ditch (894) south of gate: 7 sherds of coarse pottery, 1 sherd of plain samian

917, 929, main upper fill of third ditch (918) south of gate: 2 sherds of mortarium, 1 piece of bottle glass, 1 nail, 1 flint

1277 and 1308, fills of amorphous pit/tree hole 1276 just beyond the southern end of the outer eastern ditch: Republican *denarius* (no. 2), 9 sherds of coarse pottery including types 124, 172, 188 and 194, 2 sherds of plain samian, several fragments of calcined animal bone, 1 nail, 1 piece of cinder

1307, upper fill of second ditch (894) south of gate: 1 sherd of coarse pottery, type 59, 1 nail, 1 piece of glass

1705, upper fill of second ditch (1704) north of gate: 2 sherds of coarse pottery, 3 sherds of amphora

1730, upper fill of outer ditch (1729) south of the gate: 3 sherds of amphora

1733, basal fill of outer ditch (1729) south of the gate: well-preserved plant remains mainly in the form of environmental indicators (below 11.2.4), but including cereals remains and bran fragments, some parasite eggs

1765, primary fill of cross ditch (1762): 1 sherd of amphora, burnt daub

1763, upper fill of cross ditch (1762): lava quernstone fragment, daub

North side inner ditch, 1470, west of the gate

1472, middle fill: 2 sherds of coarse pottery

1473, primary peaty waterlogged fill: crescentic copper-alloy harness mount (no. 19), well-preserved plant remains mainly in the form of environmental indicators but also including small quantities of fig seeds, bran, and carbonised barley (below 11.2.4), various timber offcuts, piece of sheep/goat bone, 1 sherd of coarse pottery

1475, collapse/slippage on sides and at bottom of ditch: some waterlogged plant remains mainly in the form of environmental indicators (below 11.2.4), but also including 1 hazelnut shell
 1482, upper fill: 1 sherd of coarse pottery

West side

602, 2258 and 1278, upper fills of third ditch (601) north of the gate: 6 sherds of coarse pottery, 1 sherd of plain samian, 1 sherd of amphora
 608, cobble revetment butt end of ditch 601: 1 sherd of plain samian; 2 sherds of mortarium.
 612, upper fill of third ditch (611) south of the gate: 2 sherds of samian, 1 decorated (D66)
 613, middle fill of third ditch (601) north of the gate: vitrified stone
 615, fill of outer ditch (614) south of the gate: 1 sherd of decorated samian (D67), 1 sherd of coarse pottery, type 101, 1 sherd of mortarium, vitrified stone
 1151, fill of second ditch (1182) south of the gate: 8 sherds of amphora
 1273, uppermost fill of outer ditch (1272) north of gate: 10 sherds of coarse pottery, 6 sherds of samian, including 3 decorated (D49, 50 and 70), 1 from the same vessel as found in the fill of tree hole (1247) beneath building G and in the annexe dividing gully (138), 1 piece of bottle glass
 2016, middle fill of inner ditch (1184) south of the gate: 8 sherds of coarse pottery, 2 sherds of plain samian, 1 fragment of bottle glass, charcoal
 2255, fill of second ditch (605) north of the gate: 2 sherds of coarse pottery, 1 sherd of plain samian

Note

¹ For the purposes of the calculation the total rampart length was estimated to be 486m, less 200m constructed in clay. The rampart height was assumed to be 3.5m and width 6.5m, with an earth core representing *c.* 22% of the cross-section.

7.2 GATES

7.2.1 DESCRIPTION

As was the norm for auxiliary forts, Elginhaugh was provided with four gates, one in each side (FIGS 7.9–7.12). Unlike most forts, however, they were all centrally located, rather than the two at either end of the *via principalis* being displaced towards the front of the fort to allow for the additional space normally taken up by the combination of the central range and the *retentura*.

Each gate was double-portalled and provided with flanking towers, which projected in front of the gate portals: a basic design (below 7.2.2). However, three of the gates (South, East and West) were additionally and uniquely provided with forward extensions to these towers, which served to continue the gate structure to the front of the rampart (PLATE 7.3). This thickened or turned inwards at each entrance (above 7.1), completely filling the base of each tower. At the East Gate a slot 0.36m deep (991) connected the rear posts of the south tower, presumably to provide additional support for the revetment of the rear of the rampart (FIG. 7.11). Access to the towers and rampart top was by means of ramps (*ascensus*). One was provided at each gate, attested by the thickening of the rampart to the left-hand side as viewed from the interior of the fort (above 7.1).

The slightly simpler, though standard, arrangement of the North Gate, which lacked extensions to the towers, may reflect the different treatment of the *retentura*. Both poor preservation and difficult conditions of excavation in this area of waterlogged clay-silt may, however, have resulted in the failure to detect the additional post-pits. Nor was it possible to determine the relationship with the rampart, which had been completely ploughed away here.

The six-post towers on each side of the gates were not regular rectangles but splayed outwards mirroring the curve of the rampart. This was achieved primarily by setting back into the body of the rampart the front post adjacent to the roadway. In the South and East Gates, and on one side of the West Gate, this was the only serious divergence from rectangularity. Had this been maintained, the towers would have measured something of the order of 3.5m by

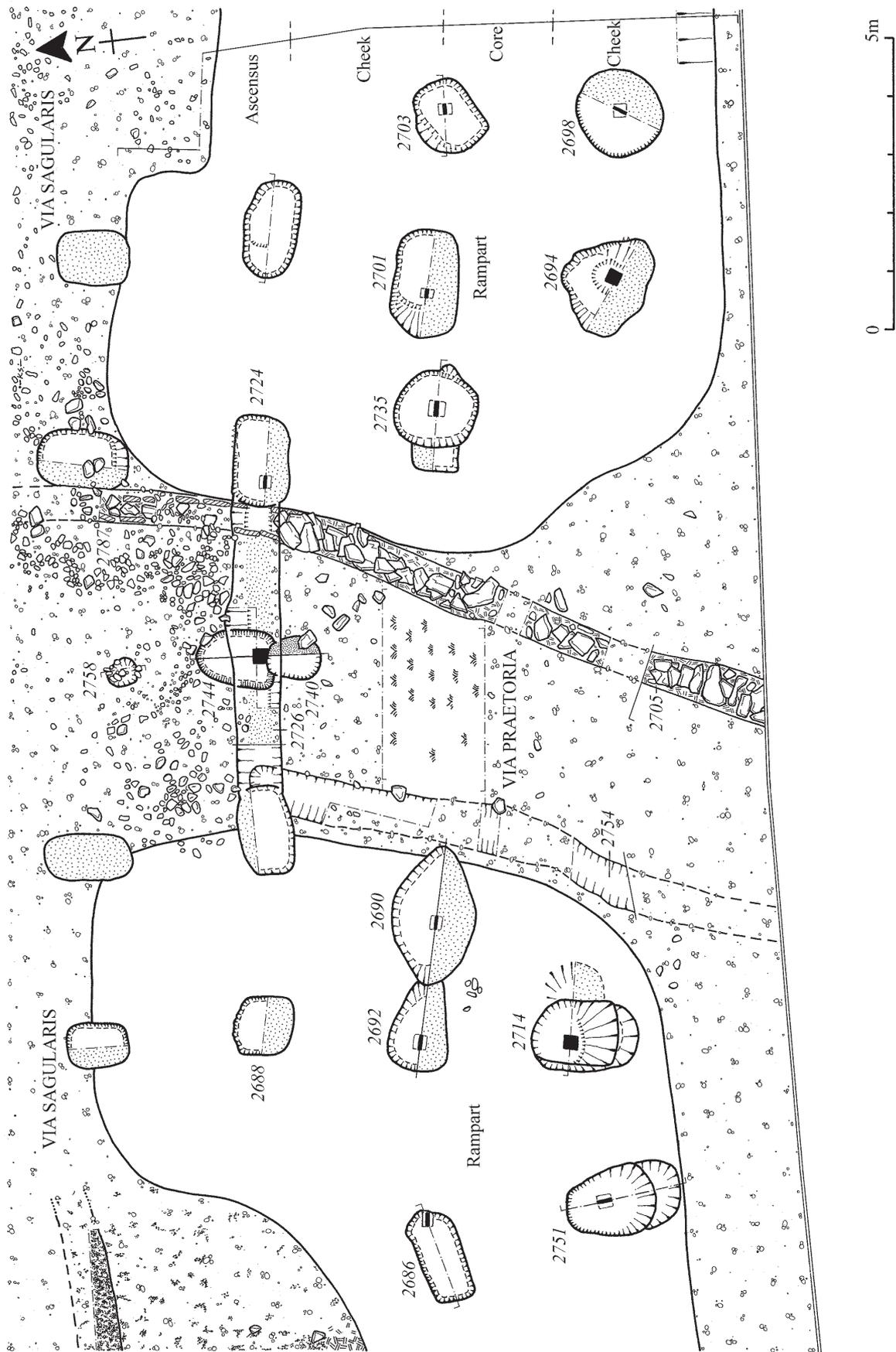


FIG. 7.9 Plan of South Gate

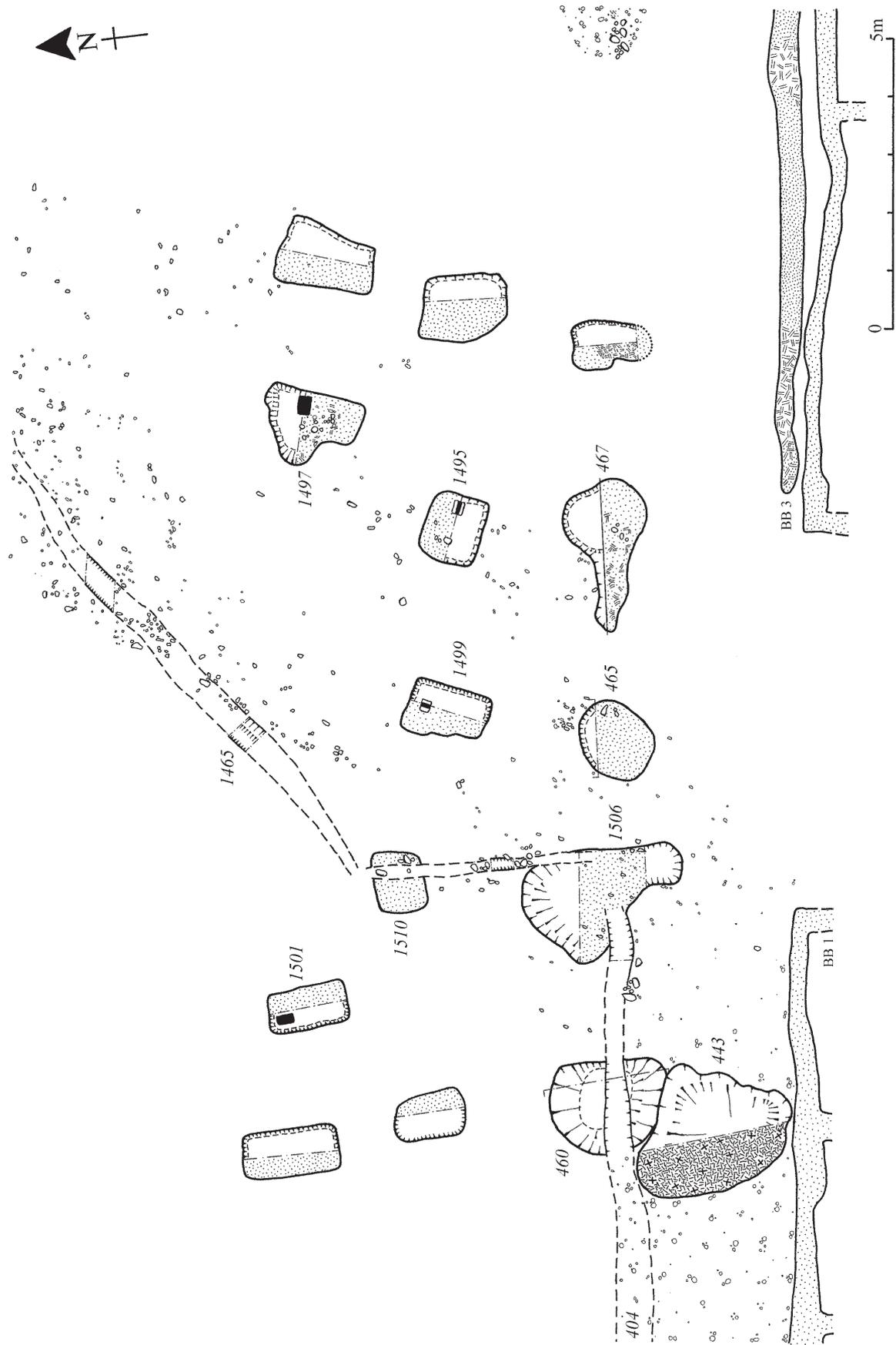


FIG. 7.10 Plan of North Gate

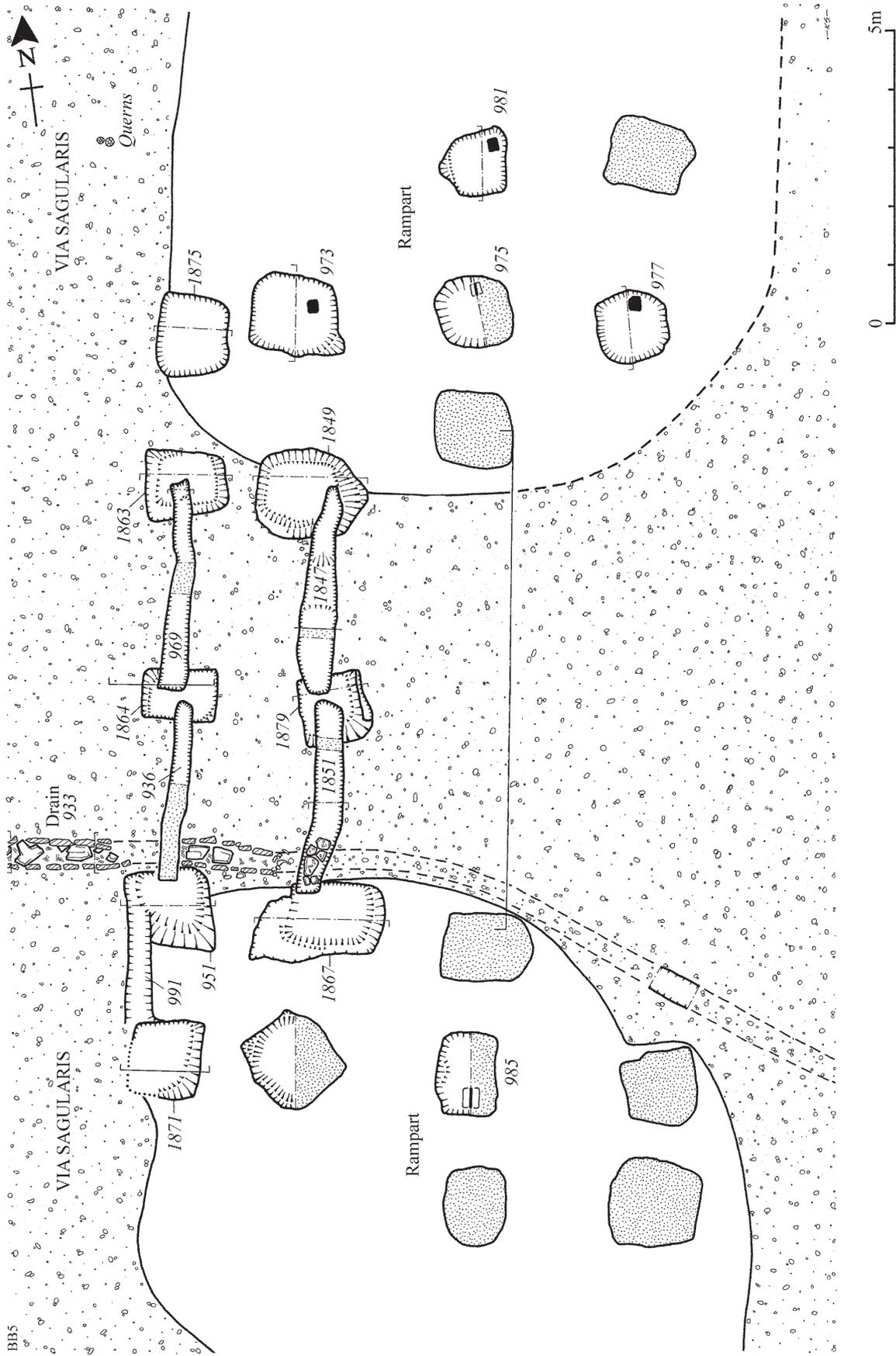


FIG. 7.11 Plan of East Gate, phases 1 and 2

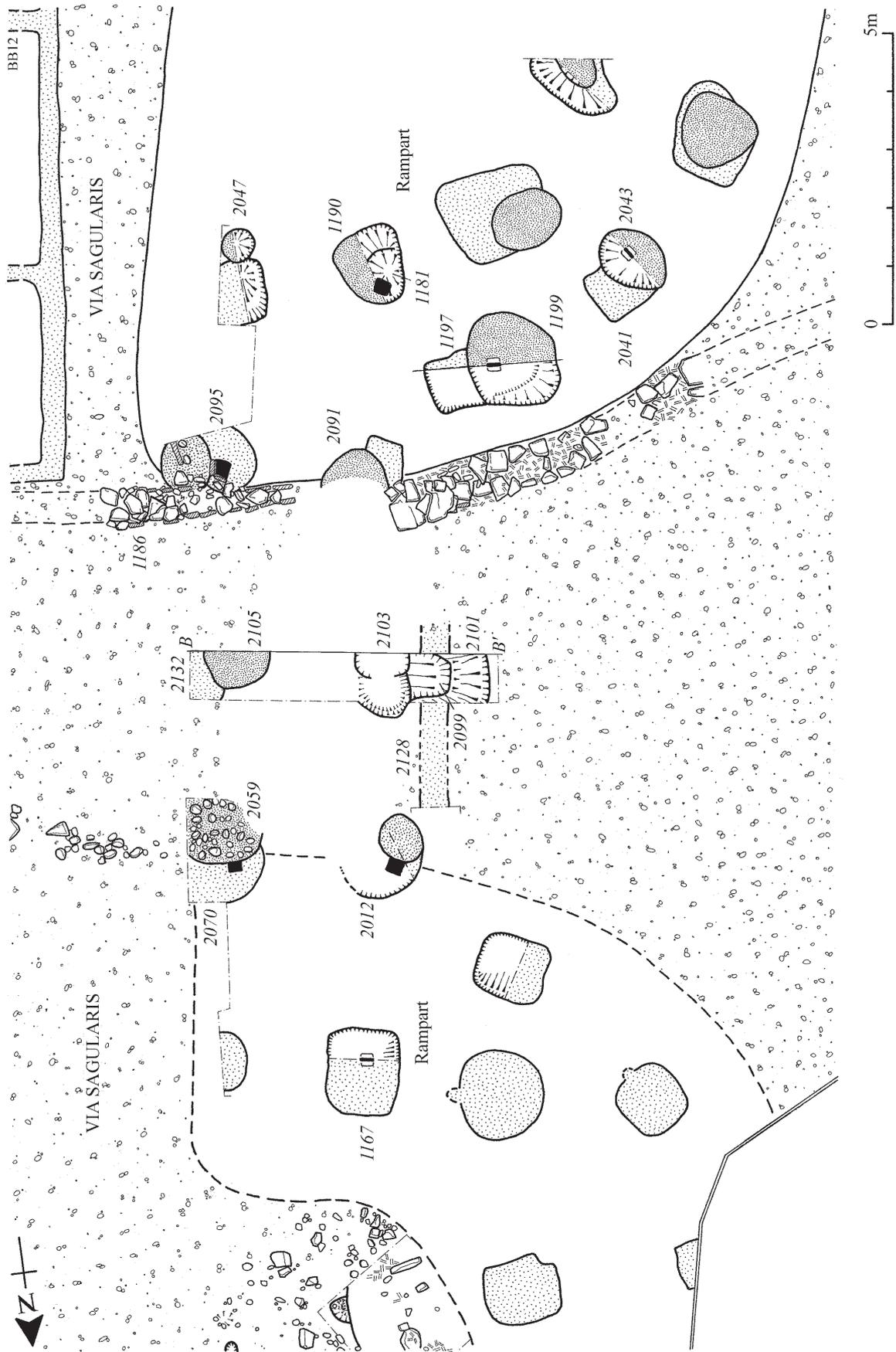


FIG. 7.12 Plan of West Gate, phases 1, 2 and 3



PLATE 7.3 East Gate and water-filled ditches beyond during excavation; view east

5.7m externally. In fact, however, the former dimension narrowed to 2.3m at the front of the tower because of the displacement of the inner post. The North Gate and the south tower of the West Gate were less regular with both of the front posts offset, though, insofar as can be determined from estimating the position of posts within large post-pits, the overall dimensions were broadly commensurate.

Except at the North Gate, the six posts which defined the passageway formed a regular rectangle. There was, however, some considerable variation in the width of the individual portals. The width of the eastern portal of the South Gate, as measured between the inside edges of the post-impressions, was 2.75m; the equivalent distance in the North Gate was 3.4m. A threshold trench (2726), originally some 0.4m wide and 0.28m deep (FIG. 7.15), though subsequently disturbed and enlarged, was recorded running across the outer portals of the South Gate (PLATE 7.4). Slight traces of a similar trench (2128) in approximately the same position were noted in section at the West Gate (FIG. 7.18b), though this was 0.63m deep and sealed by road metalling, and may best be interpreted, like the equivalent trenches across both front and rear portals of the East Gate, as a later blocking feature (below 7.2.4).

Stone-lined drains exited the fort at each of the gates. They ran under the road and tended to follow the edge of the rampart. Two, one on each side of the road, were recorded at the South Gate, though that on the west may not have been completed for it contained no stone lining and did not continue into the fort, stopping at the gate threshold. The layout and construction of the drains is discussed more fully below (7.4).



PLATE 7.4 South Gate, central post-holes 2744 and 2740, slot 2726 and later cobbling 2787; view south

7.2.2 INTERPRETATION AND ANALOGIES

Double-portalled gateways flanked by six-post towers are commonly attested in Flavian and earlier auxiliary forts in both Britain and Germany (Manning and Scott 1979, types IIIb, IVb). Both types provide a recessed entrance that added to the security of the gate if attacked, facilitating enfilading fire from the front of the towers. The important distinction between the two variants is that the posts of type IIIb towers are usually contained within the rampart and were, accordingly, closer together across the depth of the gate, while the towers of type IVb generally project to the rear. Indeed, there is evidence from a number of forts (FIG. 7.13), notably Pen Llystyn (Hogg 1968, 115), Hod Hill (Richmond 1968, 70) and Great Casterton (Todd 1968, 26), that the whole of the ground floor of some towers may have been accessible and presumably served as a guard chamber. At others, such as the well-preserved south gate at Carlisle, the rampart continued across the front of the tower (Charlesworth 1980), though in this case the parts projecting from the back of the rampart could not have been used as guard chambers for, despite being enclosed by wattle walls, they lacked doorways (Frere 1985, 274). In the west gate at Oakwood, one of the few examples of gateways at forts with inturned ramparts to have been extensively excavated, other than Elginhaugh, the towers were completely open at the base (Steer and Feachem 1952, 89–96). But this gateway was apparently of simpler design¹ and positioned entirely to the rear of the rampart. At Elginhaugh, however, the whole of the base of each tower was filled by rampart material.

In respect of their overall plan, three of the gates (South, East and West) form a unique group. They were provided with three additional posts on each side that extended the towers out and to the side, linking into the alignment of the main body of the rampart. Such an arrangement is not readily paralleled in Britain, though is reminiscent of the more elaborate L-shaped gateways of Augustan date in Germany, such as Haltern (von Schnurbein 1974, 48–53) (FIG. 7.13f).

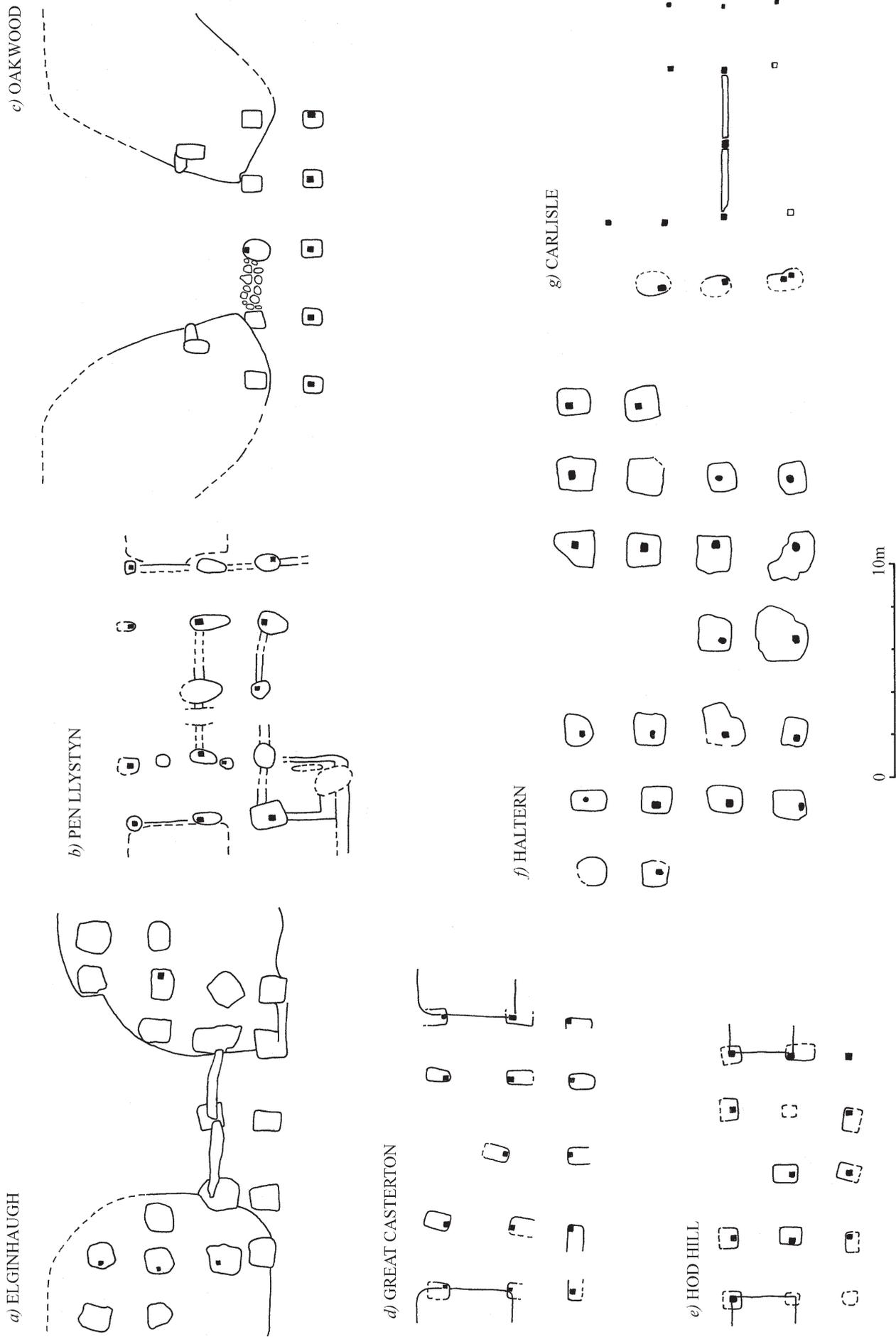


FIG. 7.13 Comparative gateway plans: a. Elginhaugh, East Gate; b. Pen Llystyn; c. Oakwood; d. Great Casterton; e. Oakwood; f. Haltern; g. Carlisle

7.2.3 CONSTRUCTION AND RECONSTRUCTION

The gateways at Elginhaugh, like other military timber gateways, were supported by large posts set within individual post-holes of such size to merit the description post-pits. The dimensions of the posts varied, but they were generally rectangular with a maximum of 0.34m and a minimum of 0.14m recorded (TABLE 7.2; PLATE 7.5). The average, 0.22m by 0.25m in cross-section, is slightly smaller than the dimensions generally recorded in first-century forts elsewhere (Hanson 1978, 300–1). Two of the three extant timbers proved to be alder (below 10.9), which is not normally regarded as a structural timber. The employment of alder rather than oak, the most frequently attested timber in structural contexts (Hanson 1978, 299), has broader implications about both the supply of building materials and the nature of the local environment (below 12.3 and 12.5).

The pits into which the posts were set were large, as much as 2m across and up to 1.55m deep. The only exceptions were the middle post-pit (2758) at the back of the South Gate and a secondary post-pit (2047) at the rear of the south tower of the West Gate. These were only 0.5–0.6m in diameter and 0.33m deep, though the full dimensions of the former may not have been recovered. The large surface dimensions of the pits relative to the size of the posts they contained is simply a function of their depth, which in turn is a function of the height of the post. In order to dig a pit deeper than 0.6m or so, it is necessary to widen it sufficiently to let the excavator work within the hole. The post-pits of the primary phase were neatly dug, generally subrectangular with straight sides and flat bottoms, while the secondary pits tended to be less regular and slightly shallower. This contrast was particularly evident at the East Gate (e.g. FIG. 7.14a and b). Whether this implies more hurried work, less concern for military precision or different builders is impossible to say.

Several of the post-pits seem to have been provided with one side which sloped more gently, such as pits 1849 and 1867 in the East Gate, or 2714 and 2692 (FIG. 7.15a) in the South Gate; while the regularity of the post-pits in the North Gate was broken in some cases (467, 1497 and 1506) by narrow ramp-like projections. These would have been an unnecessarily extravagant means of extracting the post and, in any case, demonstrated no sign of such disturbance.

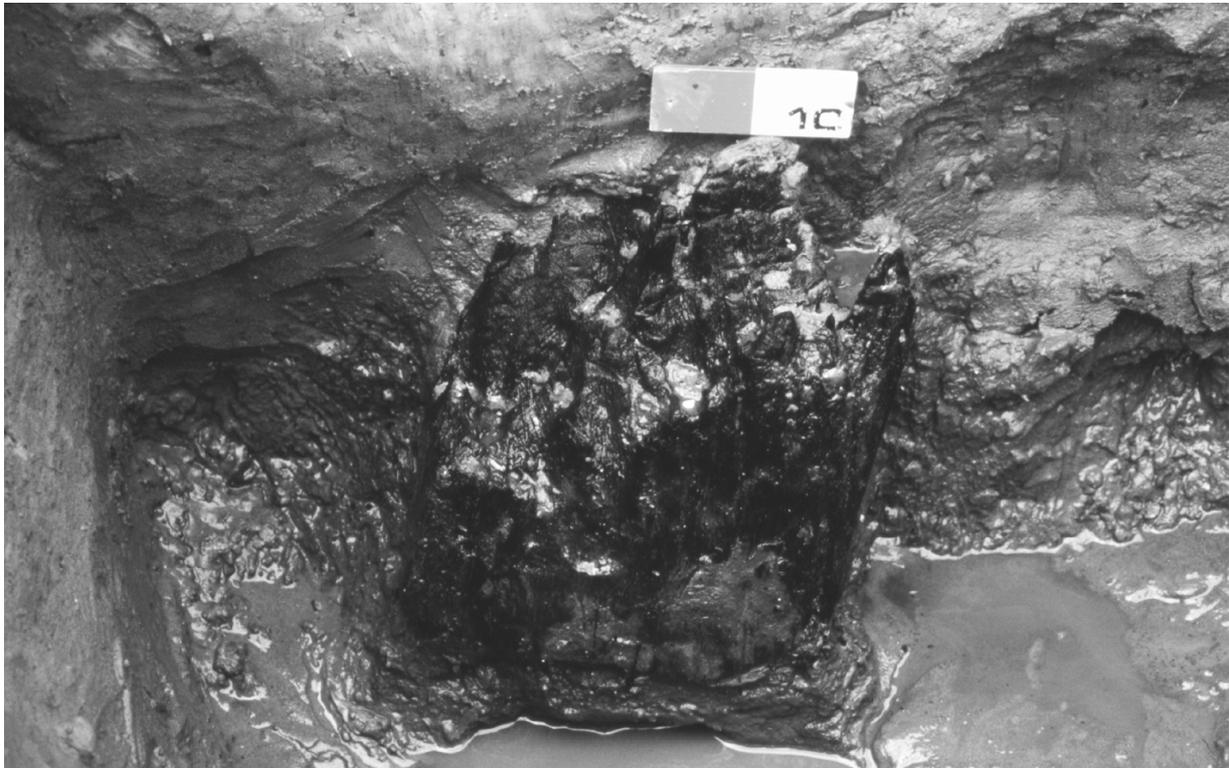
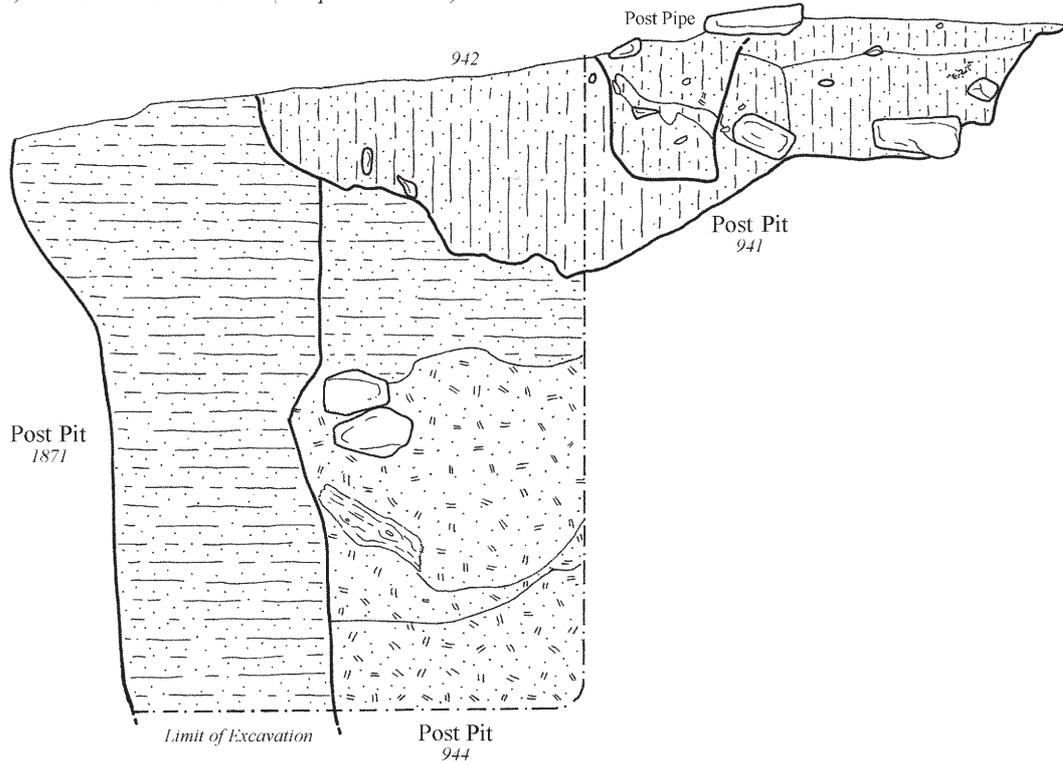
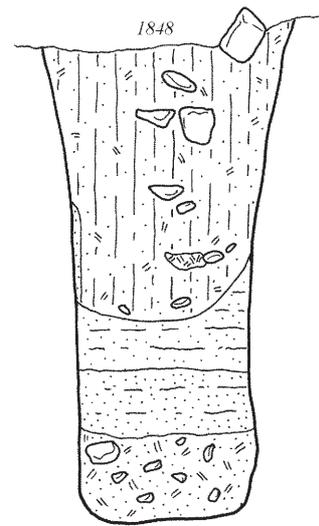
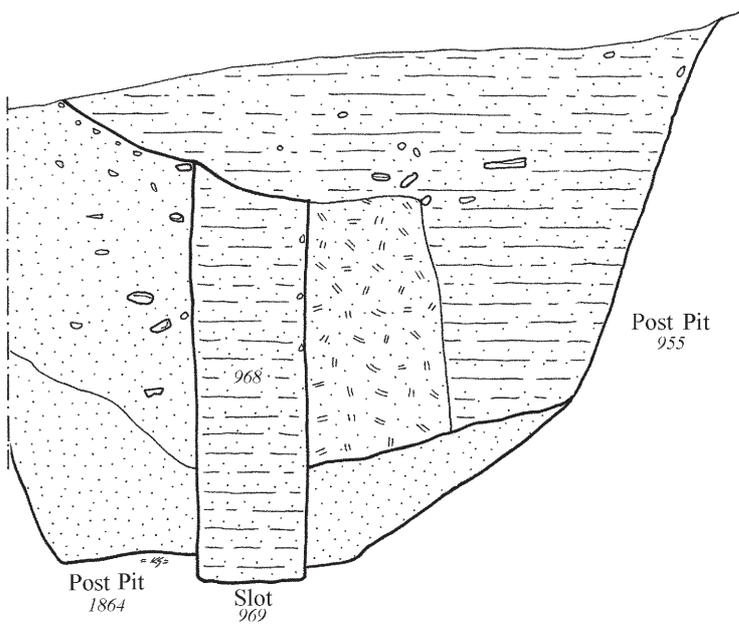


PLATE 7.5 Extant oak post within post-pit 1497, North Gate; view south

a) Post Pits 941/944/1871 (composite section)



b) Post Pits 955/1864



c) Slot 1847



FIG. 7.14 Sections through gate post-pits and slots: East Gate

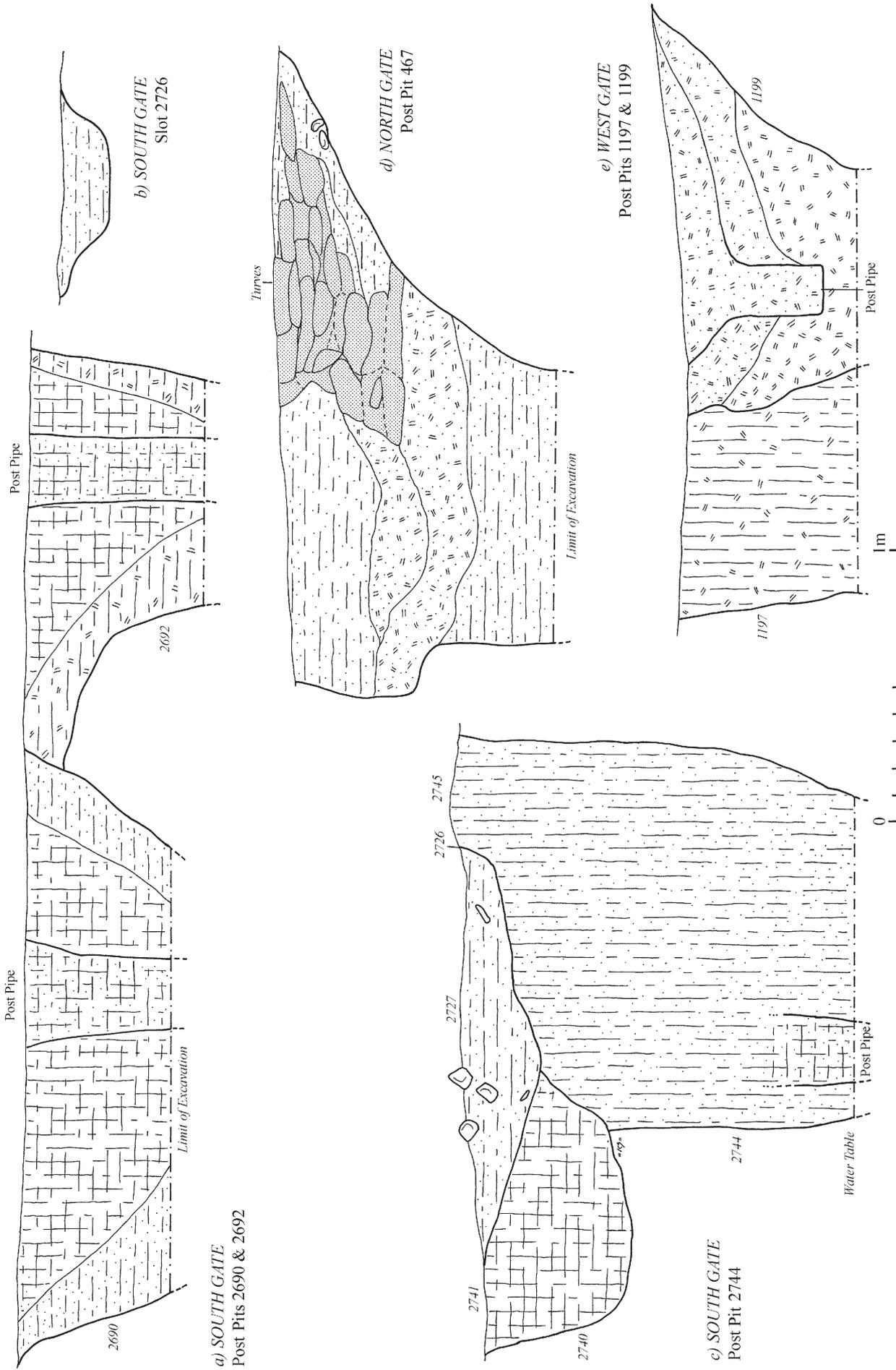


FIG. 7.15. Sections through gate post-pits

TABLE 7.2: GATE-POST DIMENSIONS

Phase	Context	Dims (m)	Nature of survival
<i>East Gate</i>			
1	977	0.22 x 0.24	irregular impression
1	973	0.26 x 0.27	subrectangular impression
1	975	0.2	impression in section
1	981	0.22 x 0.25	impression
1	985	0.34	impression in section
2	965	0.18 x 0.21	subrectangular impression
2	963	0.24 x 0.26	subrectangular impression
2	941	0.29 x 0.36	subcircular impression
2	944	0.25 x 0.3	subrectangular impression
<i>South Gate</i>			
1	2686	0.24	impression in section
1	2744	0.25 x 0.25	impression
1	2724	0.2	impression in section
1	2694	0.25 x 0.25	impression
1	2698	0.23	impression in section
1	2703	0.18	impression in section
1	2701	> 0.15	impression in section with extant alder fragment
2	2692	0.25	impression in section
2	2690	0.25	impression in section
2	2751	0.25	impression in section
2	2714	0.25 x 0.25	impression
2	2735	0.25	impression in section
<i>North Gate</i>			
1	1497	0.24 x 0.3	extant oak (PLATE 7.5)
1	1501	0.15 x 0.29	extant alder
1	1495	0.24	impression in section
1	1499	0.14	impression in section
<i>West Gate</i>			
1	1167	0.3	impression in section
1	2070	0.2 x 0.25	impression
1	2012	0.28 x 0.28	impression
1	2095	0.22 x 0.28	impression
2	1190	0.2 x 0.25	impression
2	2043	0.2	impression in section
2	1199	0.18	impression in section

Indeed, the best example (467) had clearly been packed with turf (FIG. 7.15d). There can be little doubt, therefore, that they had served as ramps to facilitate the placing of the massive posts within their pits. Equivalent features are recorded in four of the post-holes in the east gate at the Lunt, Baginton (Hobley 1972, 19, fig. 6).

There was no standard position for the posts within the pits. Though a marked preference for the location of each post against one side of its pit was noted in the East and North Gates, presumably to give added support, the posts in the South and West Gates were positioned predominantly in the middle of their pits. Stone packing was generally not employed, though one secondary pit (939) in the East Gate had a flat stone pad at the bottom (FIG. 7.16) and one primary post in the West Gate (2095) appeared to be defined on two sides by similar slabs, but this simply reflects its position against a T-junction of an adjacent drain (1186) (PLATE 7.10). It



FIG. 7.16 Plan of East Gate: phases 3 and 4

is not possible, therefore, to provide precise dimensions for the gates where no post-impressions are present. Nor are their positions predictable on the basis of spacing. Though uprights in gateways of type IVb are seen as uniformly some 3m apart (Manning and Scott 1979, 25), the extant examples from Elginhaugh make clear that this is only a very general approximation, for the spacing varies from 1.9m to 3.5m centre to centre.

The order in which the construction of the gateways proceeded is clear. The original ground surface was not cleared of its turf covering, as the removal of a section of roadway immediately in front of the South Gate demonstrated (below 7.4.3). Though the turf might profitably have been used in the make-up of the rampart, saving the time and effort of importing it from outside the fort area, such an advantage would have been offset by the problem of moving across and working on a surface of unconsolidated topsoil, particularly if it rained. The first activity was the digging of the post-pits and the erection of the posts within them. The assembly of the gates could then continue while the turf for the rampart was laid around the base of the towers, for in all cases the primary post-pits were sealed by rampart material. This was followed by the laying out of the drains, which cut through the backfilled post-pits, and the insertion of threshold beams where these are provided. Finally the road surface was laid sealing the drains and post-pits, though probably not covering the threshold beams.

There has been considerable debate over the method of construction of military gateways. The orthodox view, originally propounded by Richmond on the basis of his excavations at Fendoch (Richmond and McIntyre 1939, 151–2), holds that the army maintained stockpiles of pre-cut, standardised, seasoned timbers waiting to be drawn upon for fort building. On the basis of his excavations at the Lunt, Baginton, and the full scale simulation of the gateway there, Hobley took this thesis one stage further, proposing that gateways were pre-fabricated and partially pre-assembled on the ground before being hauled into position (1971, 16–17; 1982, 257, 271).

The two associated hypotheses appear to rest on the following assumptions: that gateways display such consistency of plan as to indicate centralised or standard design; that the timbers employed were of standard sizes; that gateways were regularly dismantled for re-erection elsewhere; and that seasoned timber was a prerequisite for their construction. None of these assumptions, however, can be confirmed, and detailed study of the archaeological data indicates that the first two are false. Though gateway plans frequently show general similarities, basic consistency of planning is unsurprising in a military organisation where the structures were erected to serve the same function at different sites. But examination of the plans in detail reveals wide variations not merely between broadly contemporary sites (FIG. 7.13), but even on the same site. If they derived from standard plans and utilised standard timbers, the gateways at Elginhaugh ought to have been exactly the same. They clearly were not. Nor does the data support the assertion of standard-sized gate timbers, either from Elginhaugh in particular (TABLE 7.2) or from fort gates in general (Hanson 1978, 299–302).

Whether or not gateways were regularly dismantled is more difficult to determine. If the gates at Elginhaugh had been deliberately taken down, at least some of the timbers must have been sawn off just above ground level, as is attested at Carlisle (Charlesworth 1980, 208). To have re-used these timbers in the same capacity elsewhere, as was suggested at Longthorpe (Frere and St Joseph 1974, 16–17), would have resulted in a gateway at least 1–1.5m lower than the original. Assuming that the gates had been constructed originally at their optimum height, such a reduction would have been at best inconvenient and at worst positively dangerous. To have re-used the timbers in some other capacity is indicative of the army's ability to improvise and of the ad hoc nature of construction work rather than the use of building methods that employed prefabricated elements. Finally, though it is not possible to demonstrate that gate timbers had not been seasoned, this would have been an unnecessary extravagance (Hanson 1978, 295–6). The only advantage conferred would have been to minimise relatively minor distortion in the superstructure caused by shrinkage during drying. Any resistance to rot would have been negated by placing the timbers into post-pits where they would rapidly have regained the moisture lost in the seasoning process.

Moreover, there is positive evidence that the gate timbers at Elginhaugh were not prepared in

advance, for two of the three extant examples proved to be alder (below 10.9). Nor was this simply chance, for all three of the extant post stumps from interval towers were of the same species. It seems highly improbable that the army would have gone to the trouble of felling, converting and stockpiling for use in gate and tower construction a species of tree which was not a recognised building timber, dismissed by Vitruvius as *minime materies utilis* (*de Architectura* II, ix, 10). Nor does the detailed evidence lend support to the concept of elements being prefabricated on the ground before being hauled into position, for the positioning of ramps in several of the post-pits, notably at the North and East Gates, indicates that the massive posts must have been raised into place individually.

The size of the timbers involved and the depth of the post-pits into which they were set clearly indicates that the gate superstructure was intended to rise to a considerable height. On analogy with the interval and corner towers (below 7.3.3), whose construction would have been entirely superfluous unless they provided a further storey above the top of the rampart, a three-storey structure is assumed. The illustrations of gates on Trajan's Column, usefully assembled by Hobley (1982, fig. 12.5), provide general confirmation that this was the case. A total height of 7–8m is assumed. This allows some 3–3.5m for the height of the gate, sufficient to allow loaded wagons or mounted cavalry troops to enter; a further 2.5–3m for the second storey to provide adequate room for spears to be wielded freely; and another 1.5m for the railing on the third storey.

Major debate then revolves around the extent to which the gate superstructure was enclosed and roofed. Following Trajan's Column, most reconstructions take a minimalist approach with neither roofing nor infilling between the uprights, other than simple cross-bracing, except for the continuation through the gate of the parapet on top of the rampart. In the absence of evidence to the contrary, this approach is assumed to have been adopted at Elginhaugh. In all cases the bases of the towers were contained within the rampart so that no guard chambers would have been provided at ground level. Only at the south side of the East Gate, however, was there any evidence of additional structural elements torevet the rear of the rampart. Here a flat-bottomed slot (991) 0.36m in cross-section connected the rear of two primary post-pits.

The position of the door would have been at the front of the entrance portal. The discovery of threshold slots, as for example at the South Gate at Elginhaugh and possibly at Baginton² (Hobley 1972, fig. 6), or of the surviving beam in the case of Carlisle (Charlesworth 1980, 203–7), tends to confirm this. The primary function of the threshold beam, as was demonstrated at the latter site, was to house vertical pivots into which the doors were set. To have placed the door at the rear of the gate would have considerably reduced the defensive capability of the gateway by providing a protected refuge beneath the superstructure for any attacker who got sufficiently close to take advantage of it. The provision of doors at both the front and rear was suggested at Pen Llystyn because of the presence of slots at both ends of the entrance passage, but seems an unnecessarily elaborate arrangement and was potentially inconvenient, as the excavator himself appreciated (Hogg 1968, 114). The relative rarity of recorded examples of threshold slots is no doubt related to the fact that the beams need not have been set into the ground at all. Most would simply have rested upon it, with the road surface built up around them, as is attested at Carlisle (Charlesworth 1980, 205).

7.2.4 STRATIGRAPHY AND PHASING

Since all the gates demonstrate a different development in detail, they will be dealt with in turn before summarising the broader elements of the sequence.

South Gate

Several of the posts in the South Gate, all situated towards the front of the gateway, were replaced. Whether this occurred as a single event constituting a major overhaul, or whether the posts were replaced in a more piecemeal fashion by way of running repairs, is uncertain. The former explanation is preferred because of the juxtaposition of most of the posts involved and

the careful recutting of the primary post-pits in order to maintain as far as possible the original position of the uprights. Individual repairs would have been more easily achieved simply by inserting a new post alongside the one that was beginning to fail. There is no indication whether this repair took place during the life of the fort or coincided with the secondary use of the fort enclosure, though on analogy with the West Gate (below) the former is preferred.

Some five posts in all were replaced, four in the west tower and one in the east. The two front post-pits of the extension of the west tower (2751 and 2714) and the two front post-pits (2692 and 2690) of the tower proper (FIG. 7.9) cut away most of the remains of their predecessors, the latter pair being a direct replacement within the same pits (FIG. 7.15a), the former pair displaced slightly to the north. At the inner front corner of the east tower, a circular post-pit (2735) removed most of the original rectangular one.

Small patches of secondary metalling, including some quite large cobbles, were noted within the gate portals, concentrating on the east side (2787) (PLATE 7.4). These presumably represent all that remains of a more extensive resurfacing of the road similar to that attested in the East and West Gates (below).

The central pit of the gate portal (2744) was cut into by a smaller post-pit (2740) only 0.55m deep (FIGS 7.9 and 7.15; PLATE 7.4). That it should be intended as a replacement seems unlikely given both its size and position slightly in front of the gate, so it seems best interpreted as some form of additional support for the superstructure. There may have been a similar provision at the West Gate (below). Moreover, like post-pit 2744, post-pit 2740 was sealed by the threshold slot (2726), though this seemed to have been disturbed and widened at this point. Indeed, the removal of the threshold beam along with the disturbance of part of the stone-lined drain (2705) and the presence of demolition material within it, are the only indications of demolition in the area of the gate. As surviving post-impressions indicate, the posts were not removed, though they may have been sawn off at ground or rampart level.

North Gate

There was no evidence from the North Gate of more than one phase of construction (FIG. 7.10). The post-impressions and extant timbers indicate that the posts were not removed (PLATE 7.5), though once again they may have been sawn off just above ground level. The drain (404) which approached the gate from the west cut post-holes 460 and 1506, and its presumed continuation cut 1510. A shallow demolition pit (443), dug through the *via sagularis*, also just clipped the top of post-pit 460.

East Gate

The East Gate was the most extensively examined and demonstrated a complex sequence. Narrow, straight-sided slots (936, 969, 1847 and 1851) were cut across each portal at both front and rear of the gate (FIG. 7.11; PLATE 7.3). These clearly post-dated the erection of the gate superstructure, for they cut the six backfilled primary post-pits that defined the entrance (FIGS 7.14b and 7.16). They also cut the drain (933) and seemed to cut the primary road metalling. Superficially they resemble slots for threshold beams, as noted at the South Gate (above 7.2.1), an interpretation not entirely inconsistent with their stratigraphic relationship with other features, since the beams would have been inserted after the posts had been erected. However, there are several factors which make such an interpretation difficult to sustain.

Threshold beams served to house the vertical pivots on which the doors were hung (above 7.2.3). Thus they would have been located at the front of the entrance portal where the gates were positioned, as seen at the South Gate, and not at both front and rear. Nor does it seem logical that the insertion of threshold beams should block one of the drains out of the fort, though human incompetence and the failure of one work detail to communicate with another is unlikely to be confined to modern society. More fundamentally, however, the slots are far too deep and irregular to have held threshold beams. Such slots need have been no deeper than the cross-section of the beams they contained, of the order of 0.2–0.3m, as was the case at the South Gate where the slot was no more than 0.28m deep. With the exception of the rear slot

(936) on the south side of the gate, where at one end a depth of only 0.11m was recorded, the other three slots ranged in depth from 0.61 to 1.32m (FIG. 7.14b and c). Finally, the slots were not re-dug when the gate was refurbished (below), suggesting that they were not integral to its construction. These various factors combine to suggest that, rather than housing threshold beams, these slots indicate the deliberate blocking of the entrance.

The gateway was then recommissioned (FIG. 7.16). The six post-pits that housed the gates and formed the passageway across the entrance gap at the level of the rampart top were re-dug, along with the two outer post-pits (944 and 1873) at the rear of the towers (FIG. 7.14a). These were the most readily accessible posts both to remove and replace, involving least disturbance of the rampart. That the latter two were re-erected suggests that those forming the rest of the towers and their extensions had previously been left undisturbed in the body of the rampart. It would only have been necessary to reinstate the two outer posts if it was intended to link the gate passage back into the flanking towers. The secondary post-pits were consistently shallower and less regular than their primary counterparts, for example pit 955 (FIG. 7.14b) (above 7.2.3). They also cut away the ends of the slots cut through the passageway, though they did not penetrate deeply enough to remove all traces of them. At the same time the rampart may have been widened slightly at the north portal, for the secondary gate post-pits (953 and 963) were located a little further south than their primary counterparts (compare FIGS 7.11 and 7.16).

Indeed, this reconstruction of the gate may have coincided with a refurbishment of the outer face of the rampart on both sides of the entrance passage, though at the West Gate the equivalent two events were clearly not contemporary. The refurbishment was evidenced by the laying of a cobble base around the curve of the inturned rampart over the original road surface (FIG. 7.16). The cobbling consisted of a single layer of angular, though mainly water-worn, cobbles of varying sizes up to some 0.3m across. It was best preserved on the south side of the gate where it was as much as 2.5m wide (922), the outer edge defined by a kerb made up of some of the larger stones. The rampart may have been cut back slightly, for the cobbles extended around two sides of one of the outer post-pits of the south tower (1845). Though the cobbling did not survive well immediately outside the gate portal, sufficient of the alignment of the kerb remained inside it to indicate that the rampart had extended across the south portal effectively blocking it. The cobbling on the north side of the gate passage was more fragmentary, surviving only in patches. However, a probable outer kerb-line of larger stones indicated a maximum width of 3m for the rampart extension (1890). This widening of the rampart narrowed the road leading to the gateway to 3m and funnelled traffic towards the north portal.

Secondary cobbling was also present between the inner and outer portals on the north side of the gateway, and immediately outside it on the same side (943). This was difficult to distinguish from the cobbling of the rampart base, but tended to contain a higher proportion of smaller pebbles and is assumed, therefore, to represent contemporary resurfacing of the road. It is unlikely to have been a continuation of the rampart base since otherwise both portals of the gate would have been blocked and there would have been no point in maintaining the entrance funnel between the ends of the rampart.

The relationship between the secondary gate post-pits and the cobbling was slightly ambiguous. Four of the post-pits between the ends of the rampart (939, 955, 967 and 953) were clearly sealed, at least in part, by cobbling. This may simply reflect the sequence of construction, for the normal procedure would have been to first dig the post-pits and then lay the rampart foundation or new road surface around them (above 7.2.3). But on analogy with the sequence recorded at the West Gate, the refacing of the rampart could be of a later phase. However, the two post-pits at either side of the front of the gateway (963 and 965) appeared to cut the secondary cobbling. Both showed signs of a possible secondary cut within their fills, and the latter also contained some large cobbles, which suggests that they were re-cut at a later date. This was certainly the case at the rear of the south tower where a secondary post was replaced and a new, but very shallow, post-hole (941) dug both through its predecessor (944) and through the secondary cobbling, some of which was redeposited in its fill. Further secondary

cobbling was recorded overlying the *via sagularis* to the west of the south tower, which linked into the post-fort cobbling overlying the north end of Barrack 5 (above 6.1.4). This helps to relate the refurbishment of the rampart to the phase when the fort buildings had been demolished. This correlation is supported by the discovery of a discontinuous spread of patches of burning on the road surface outside the north portal sealed by secondary cobbling (943), and the use of brick and tile, presumably derived from the demolition of the bathhouse, within the cobble base (922) of the rampart extension on the south side of the gate. There is no other evidence of demolition of the gates, though as is often suggested (e.g. Frere and St Joseph 1974, 13) the posts may have been sawn off at the level of the ground or rampart top.

One final secondary feature was a small hearth or oven (959) set into the surface of the road just to the west of the north tower (below 7.5). Since the oven would have impeded passage around the *via sagularis*, it seems most likely to have been in use when the gate was blocked. There was no sign, however, that it was sealed by any later resurfacing of the road, though it had been badly truncated by ploughing.

West Gate

A possible threshold slot (2128) was noted in section (FIG. 7.18) running across the front of the gate (FIG. 7.12). However, it was too deep (0.63m) and too far forward of the two outer posts at the front of the gate to have performed that function adequately. Moreover, it does not seem to have been re-positioned when the gateway was reconstructed. Like the slots at both the front and rear of the East Gate, it seems best interpreted as some form of blocking feature. It clearly cut a primary post-pit (2101), one of a pair at the front of the gate, an arrangement similar to that seen at the South Gate (above), and had been disturbed before being cut by a secondary post-pit (2099) (FIG. 7.18). It was also sealed by road metalling, presumably as a result of the resurfacing, attested in the section along the southern edge of the road, which is likely to have accompanied the reconstruction of the gate.

Both the entrance passage and the whole of the south tower were rebuilt, involving the replacement of 13 posts. The secondary post-pits tended to be smaller and less rectilinear in shape than their predecessors, whose positions they mirrored quite closely. With the exception of the unusually small pit 2047, which just clipped the adjacent post-pit of phase 1, and pit 1190, which was larger and removed virtually all surface trace of its predecessor (1181), the secondary pits were either contained within or cut away large parts of the primary pits which they replaced. One (2091) must have cut through the stone-lined drain (1186), though direct evidence of this was removed by a later ditch (below), while a second (2095) disturbed the T-junction of the same drain at the back of the rampart (PLATE 7.10). Post-impressions were noted in three of the pits (1190, 1199 and 2043), though two were recorded only in section (TABLE 7.2).

The central outer post of the entrance passage seems to have been recut for a second time (2103) before the gate was apparently decommissioned. A V-shaped ditch (2087), up to 2.9m wide and 1.5m deep, was dug across the entrance passage and through both phases of road metalling (FIGS 7.17 and 7.18). It also clipped four of the six secondary post-pits (2059, 2091, 2105 and 2099) that defined the entrance passage of the gateway (FIGS 7.12, 7.17 and 7.18). Presumably this involved the dismantling of the gateway at the same time, though the only direct evidence of this comes from two secondary post-pits (1199 and 2043) in the south tower where the posts had clearly been removed (FIG. 7.15e).

The ditch was in use for only a relatively brief period, with a maximum of 0.25m of natural silting containing some charcoal lenses accumulating at the bottom (2088), before it was deliberately packed with sandy clay (1095) (FIG. 7.18; PLATE 7.6). The clay was highly reminiscent of the rampart material in the immediate vicinity, from which it may have been derived. The fill was largely devoid of finds, though there was an admixture of burnt debris towards the top, presumably derived from the remains of metalworking activity at the rear of the rampart to the north of the gate (below 7.9). The infilled ditch was then sealed by the refacing of the rampart on the south side of the entrance passage. This was evidenced by

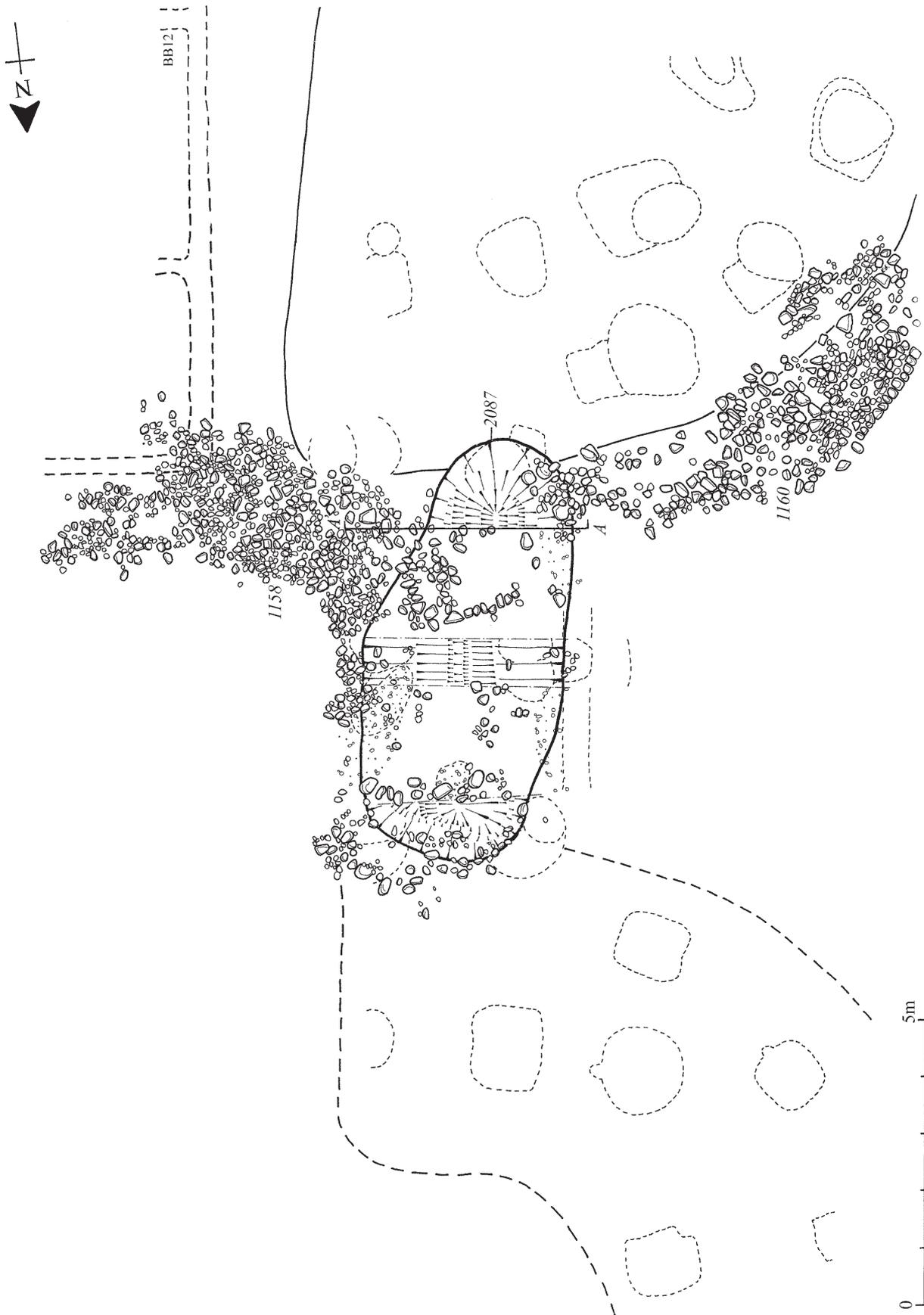


FIG. 7.17 Plan of West Gate: phases 4 and 5

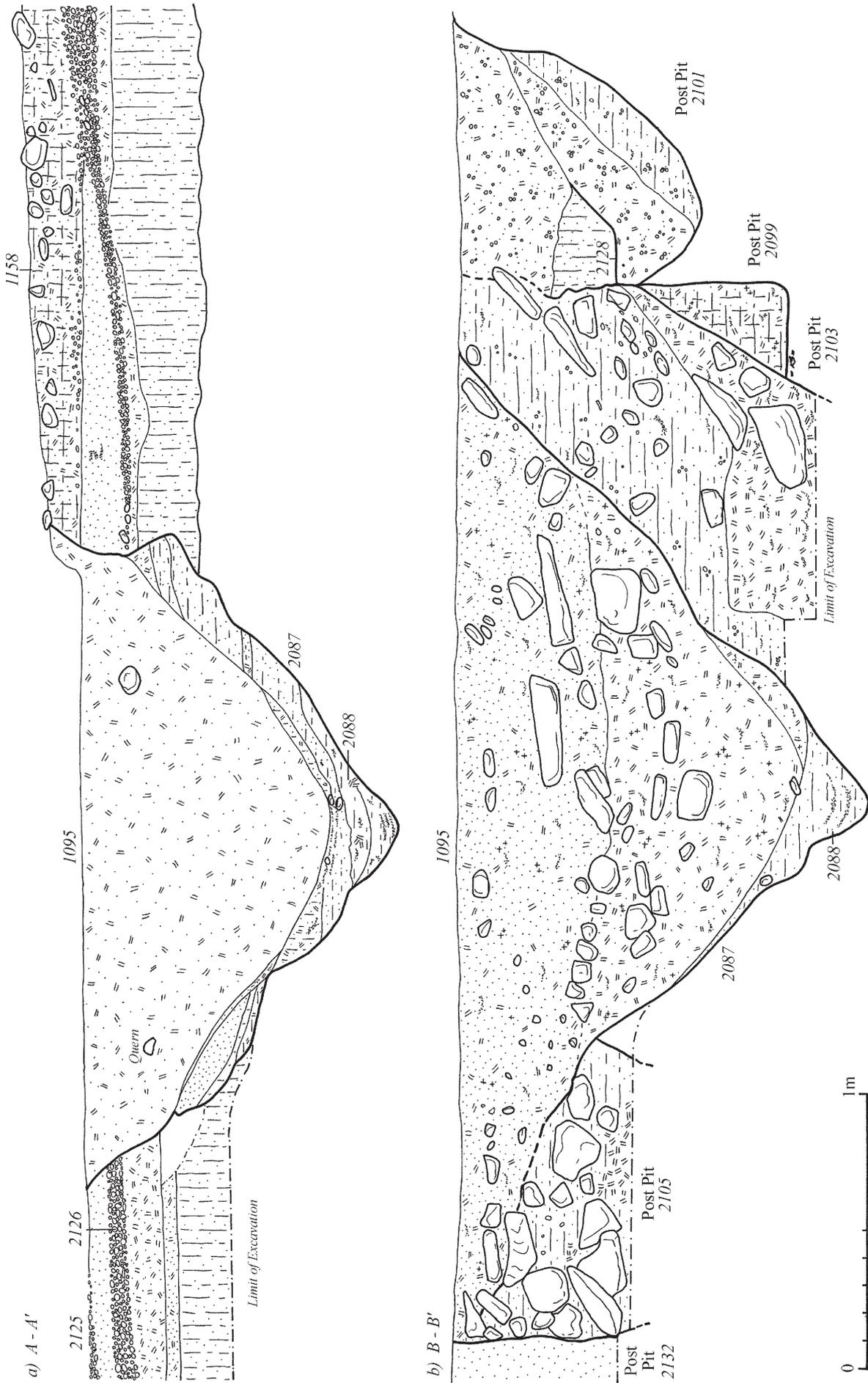


FIG. 7.18 West Gate: sections through the road (2125/6) and later cobbling (1158), post-pits (2099, 2101, 2103, 2105 and 2132) and blocking ditch (2087); for locations see FIGS 7.12 and 7.17



PLATE 7.6 Clay-packed slighting ditch 2087, West Gate; view south

the laying of a cobble base (1160) some 2.5m wide around the curve of the rampart (FIG. 7.17) overlying the primary road surface (PLATE 7.7). The cobbling consisted of the fragmentary remains of a single layer of both angular and water-worn cobbles of varying sizes up to 0.35m across, the outer edge defined by a kerb made up of some of the larger and more angular stones.

The kerb could be traced only as far as the mid-point of the infilled ditch, but the cobbling (1158) extended into the interior of the fort, overlying the *via sagularis*, the *via principalis* and the north-west corner of Barrack 12 (FIG. 7.17). Though, as at the East Gate, it was difficult to distinguish between the two sets of cobbling, the latter is best interpreted as secondary metalling within the fort similar to that attested overlying a number of buildings, including the *praetorium* and Barracks 5 and 6 (above 4.2.4 and 6.1.4). Assuming that these two very similar sets of cobbling were contemporary, this serves to link the refacing of the rampart here, as at the East Gate (above), to the phase when the fort buildings had been demolished.

Summary

The history of the North and South Gates is uncomplicated. Apart from some relatively minor repairs to the latter, they seem to have continued in use unchanged throughout the life of the fort. The structural sequence at the East and West Gates, however, is considerably more complex. Both appear to have been blocked during the occupation of the fort. The reason for this can only be a matter of surmise, but may have been related to a minor realignment of Dere Street so that it avoided passing through the middle of the fort. The subsequent recommissioning of both gates may in turn be related to the traces of remodelling seen in the interior of some of the barracks.

The second blocking of the West Gate involved the breaching of the road and the dismantling of the gate superstructure, and was probably, therefore, contemporary with the dismantling of the buildings in the interior. It was not mirrored at the East Gate, but was relatively short-lived. Once again any explanation can only be speculative, but the blocking

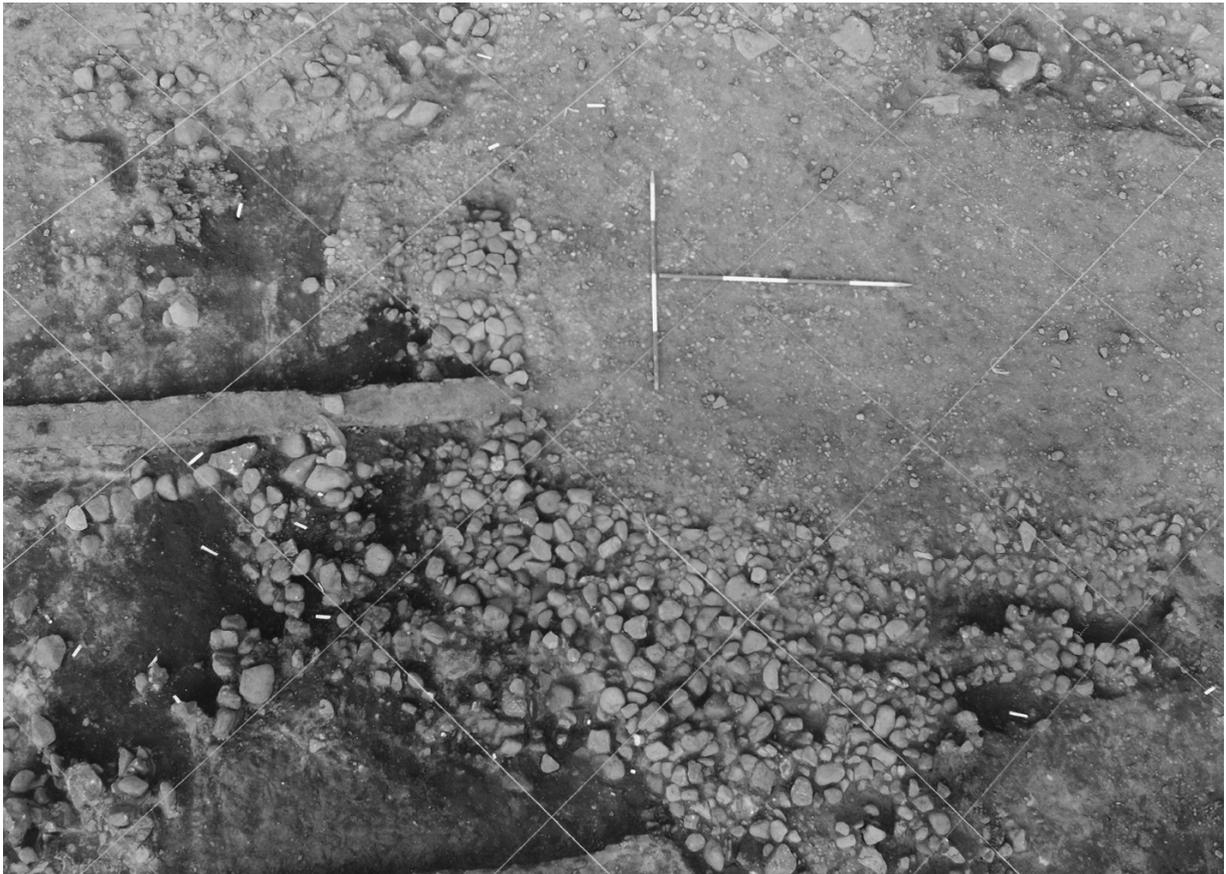


PLATE 7.7 Secondary cobbling 1158 over West Gate; view north

seems likely to be linked to the functional relationship between the empty fort enclosure and the annexe. In the final phase the history of the two gates reconverges. In both cases the entrance passage was narrowed by the refacing of the rampart, though only at the East Gate did this refurbishment seem to be accompanied by the re-erection of the posts defining the entrance. This stage of use presumably relates to the digging of the funnel ditches across the annexe linking the West Gate of the fort and the annexe gate (below 8.1).

7.2.5 ASSOCIATED FINDS

South Gate

- 2689, fill of phase 1 post-pit 2688: 1 flint
- 2695, fill of phase 1 post-pit 2694: 1 nail
- 2703, phase 1 post-pit: 1 flint
- 2727, fill of threshold slot 2726: *as* of Vespasian (no. 14), 2 sherds of coarse pottery
- 2741, fill of phase 1 post-pit 2740: iron rod (no. 208), 1 nail, 1 sherd of mortarium.
- 2745, fill of phase 1 post-pit 2744: 2 sherds of coarse pottery
- 2751, secondary post-pit: 4 sherds of amphora, daub
- 2759, fill of phase 1 post-pit 2758: 1 sherd of mortarium

North Gate

- 442, fill of demolition pit 443: 5 sherds of coarse pottery, including types 56 and 154, 1 piece of glass, nails, charcoal, daub
- 458, fill of post-pit 460: whetstone (no. 246), 1 sherd of coarse pottery, 1 sherd of amphora, 2 sherds of samian

464 and 1469, fills of post-pit 465: 5 sherds of coarse pottery, including type 12, daub, nails
 1498, fill of post-pit 1497: 1 sherd of coarse pottery, 1 sherd of mortarium, extant oak post and fragments of alder
 1508, fill of post-pit 1506: 2 sherds of coarse pottery
 1509, fill of post-pit 1510: 1 sherd of coarse pottery, 1 melon bead

East Gate

911, 935, 938, 943 and 990, secondary cobbling: some 50 sherds of amphora, 1 sherd of samian, nails, 1 flint, cinder
 920, disturbed rampart material/demolition by East Gate: *as* of Vespasian, no. 26, copper-alloy stud head filled with lead caulking (no. 42), copper-alloy handle of vessel (no. 71), unidentifiable copper alloy, iron strip with rivet holes (no. 211), triangular sheet of lead (no. 225), unidentifiable lead, 1 gaming counter, 5 sherds of samian, including 1 decorated (D15), 11 sherds of mortarium, over 125 sherds of amphora, over 100 sherds of coarse pottery, including types 42, 53, 54, 67, 72, 89, 106, 138, 165, 169, and 180, 2 fragments of glass (bottle and jar), 5 sherds of Iron Age pottery, over 20 pieces of tile, numerous pieces of animal bone, including cattle and horse teeth, 1 fragment of oyster shell, native bun- and disc-shaped querns nos 1 and 3, 2 pieces of lava quernstone, over 20 nails, daub, charcoal
 934, fill of drain 933: 1 flint
 937, fill of blocking slot 936: bricks
 940, fill of secondary post-pit 939: 2 sherds of coarse pottery, brick, charcoal
 942, fill of secondary post-hole 941: 8 sherds of coarse pottery including type 169, 1 sherd of amphora, 1 sherd of mortarium, nails, daub, charcoal, cinder
 950, fill of phase 1 post-pit 951: 1 sherd of coarse pottery
 952, rampart material: 2 sherds of coarse pottery, 1 sherd of amphora, 1 piece of glass, 1 sherd of prehistoric pottery, nails, vitrified lithic
 954, fill of secondary post-pit 953: 4 sherds of coarse pottery, 4 sherds of amphora, fragments of animal bone
 962, demolition fill of post-impression in secondary post-pit 963 : 10 sherds of coarse pottery, 1 sherd of amphora, nails
 964, fill of secondary post-pit 965: 3 sherds of amphora, including 1 Dressel 38, 1 nail
 968, fill of blocking slot 969: coarse pottery type 72, 1 sherd of samian, 1 sherd of mortarium, 2 sherds of amphora 1 melon bead, 1 nail
 1848, fill of blocking slot 1847: 1 sherd of amphora, 1 nail
 1852, fill of blocking slot 1851: 1 sherd of coarse pottery
 1862, fill of phase 1 post-pit 1863: 2 sherds of amphora
 1874, fill of secondary post-pit 1873: 3 sherds of coarse pottery, 1 sherd of mortarium

West Gate

1095/1193, fill of slighting ditch 2087: 4 sherds of coarse pottery, including type 26, 20 sherds of amphora, 1 sherd of mortarium, lava quern (no. 14) and 20 other fragments, several pieces of brick, 1 nail, several unidentified iron objects, 1 piece of cinder, charcoal, 1 piece of flint
 1136 and 1160, secondary refacing of rampart: 1 sherd of coarse pottery, copper-working slag, cinder, 3 fragments of animal bone, including sheep/goat, 2 fragments of unidentified iron
 1170, fill of post void in post-pit 1167: 1 sherd of coarse pottery
 2014, 2015, fills of post void in post-pit 2012: charcoal
 2041, primary post-pit: 1 piece of flint
 2044, fill of secondary post-pit 2043: 1 piece of flint

Note

¹ It is possible that the gates at Oakwood are more directly analogous in plan to those at Elginhaugh than at first appears. At neither the east nor west gates at Oakwood did excavation extend far enough to uncover a front outer post-pit for any of the towers, though possible inner post-pits, interpreted as derrick holes (Steer and Feachem 1952, 94–5), were noted within the body of the rampart in front of each tower (FIG. 7.13e).

² The slots were interpreted by the excavator as derived from an earlier building (Hobley 1972, fig. 1), but are not discussed in the text and are more readily understood as related to the gate. Their stratigraphic relationship with the gate posts-pits may be explained by the subsequent removal of the posts.

7.3 CORNER AND INTERVAL TOWERS

7.3.1 DESCRIPTION

As the name implies, corner towers were situated at each of the four corners of the fort (FIGS 7.19–7.22, 7.29 and 7.31). There would have been two interval towers along each side of the fort, situated approximately midway between corner tower and gate. Three of the four corner towers and five of the eight interval towers were uncovered in whole or in part, though not all of their exposed post-pits were excavated. The fourth corner tower lay just outside the excavated area and was not, therefore, investigated. Given the regularity of both distribution and form of the interval towers, and pressure of time towards the end of the excavation, it was decided not to seek confirmation of the existence of the last three. The towers were all set within the body of the fort rampart, which made them difficult to detect. Where their relative positions could be established, the front posts were set back some 1.6–2.5m from the front of the rampart.

The corner towers were subrectangular, six-post structures, the posts set in a chevron pattern to follow the curve of the rampart (PLATE 7.8). Insufficient post-impressions were evident to allow precise dimensions of the towers to be given but, assuming that the posts were centrally located within their pits, they would have measured 6–6.2m by 2.7–3.3m externally. In the one example, in the south-west tower, where post-impressions were identified, a width of 2.8m was recorded (FIG. 7.19). In one case, in the north-west corner, the distance between the inner three post-pits was over 1m less than between the outer three, which would have resulted in a slightly fan- or wedge-shaped tower (FIG. 7.21).



PLATE 7.8 South-west corner tower; view south

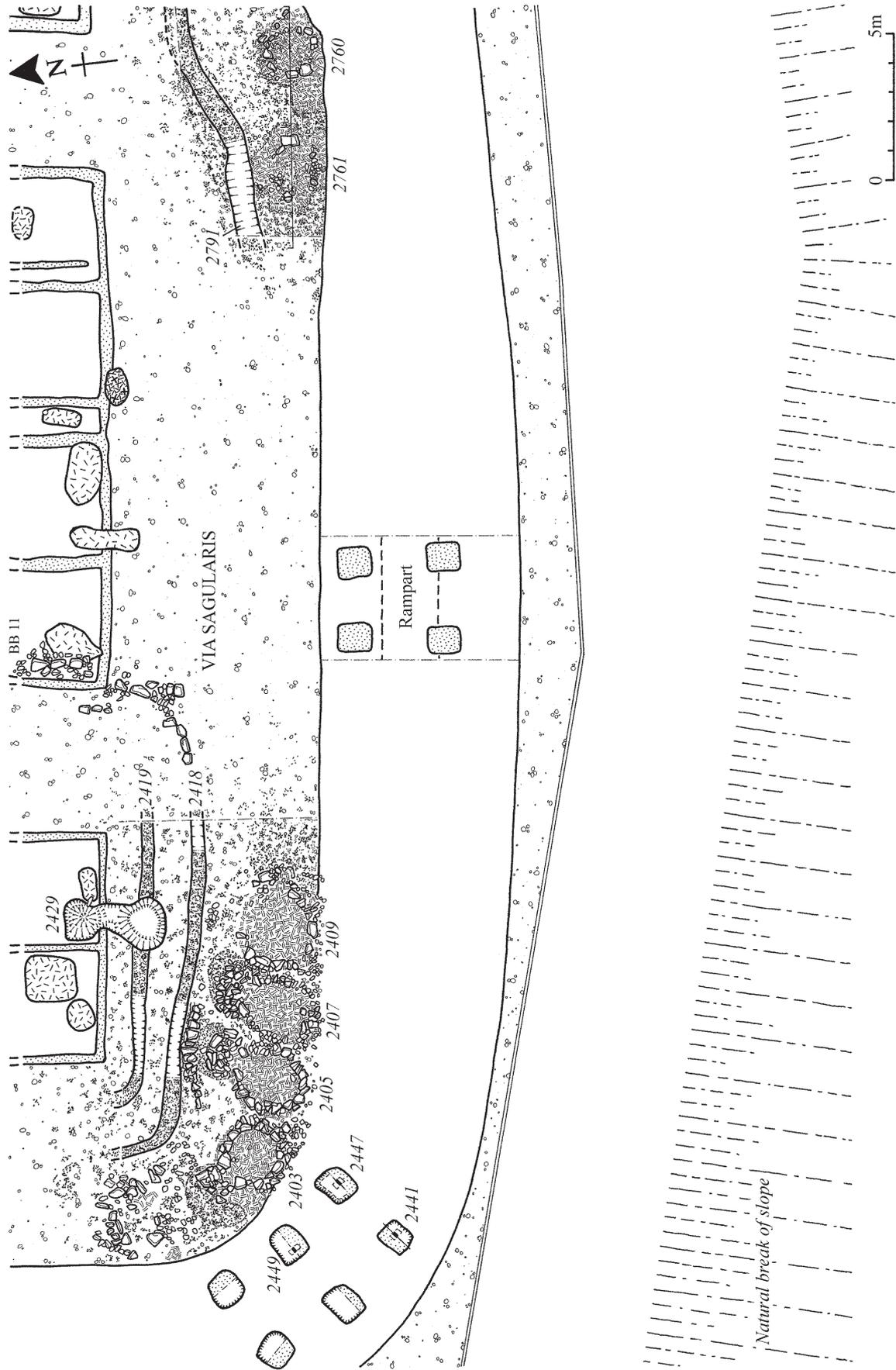


FIG. 7.19 Plan of south perimeter of the fort (west)

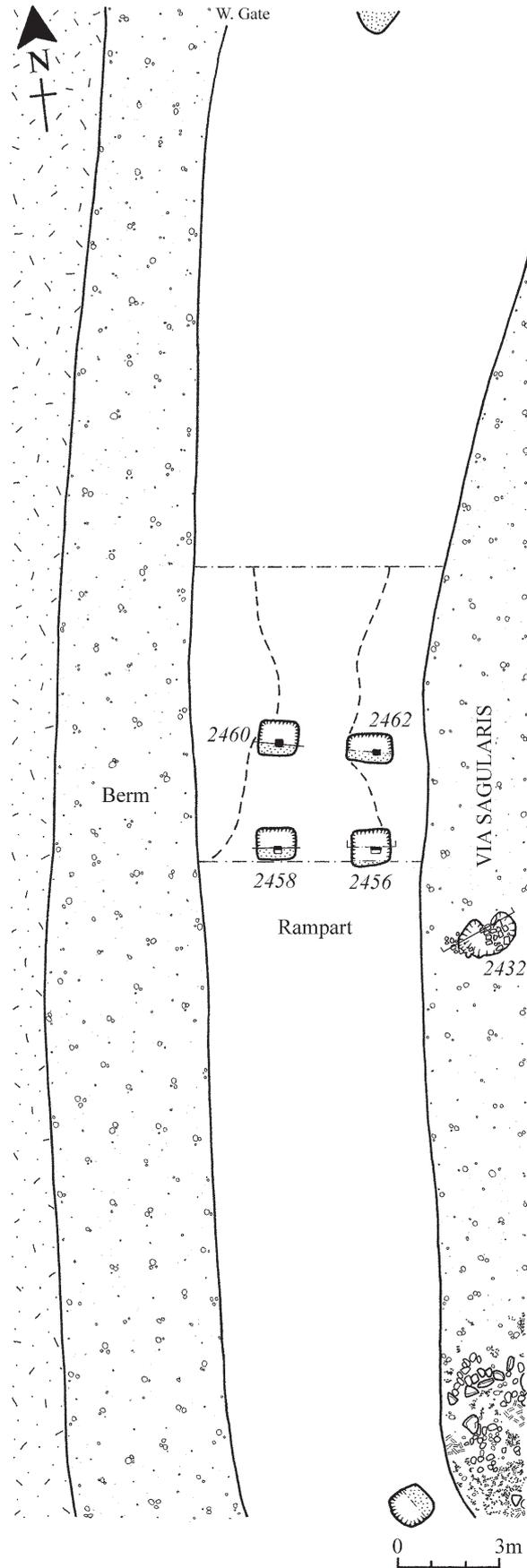


FIG. 7.20 Plan of west perimeter of the fort (south)

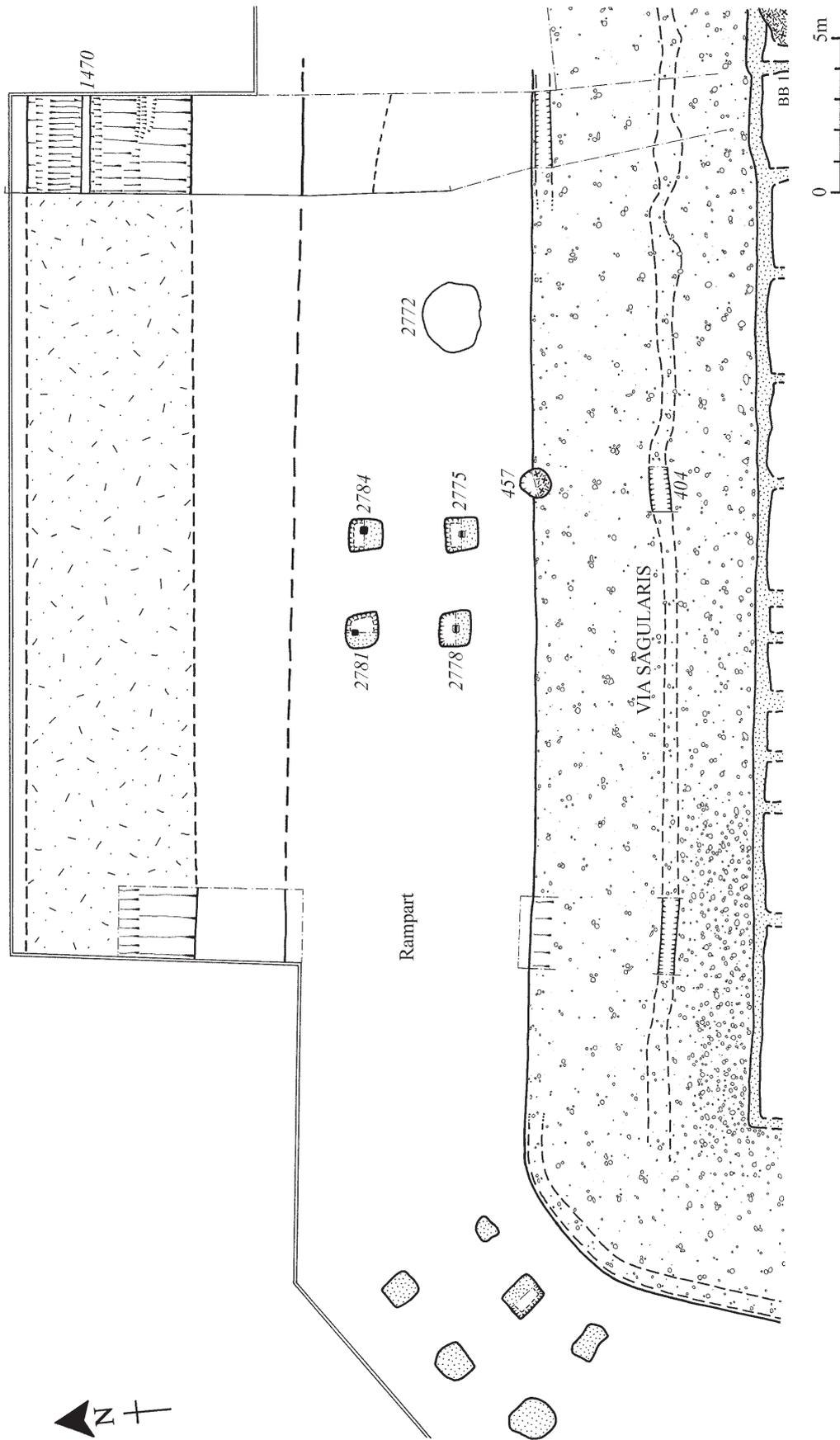


FIG. 7.21 Plan of north perimeter of the fort (west)

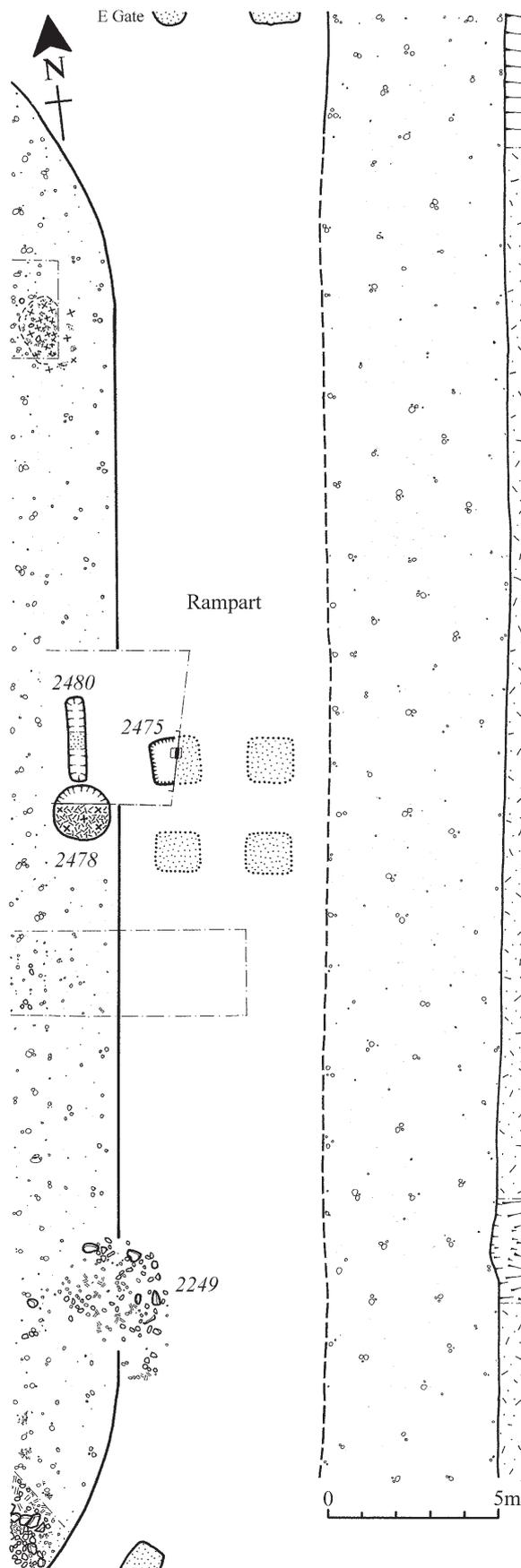


FIG. 7.22 Plan of east perimeter of the fort (south)

The interval towers were simple, approximately square, four-post structures. The greater number of post-impressions noted allowed more precise dimensions to be recorded in two cases, the west-south-west and north-north-west towers (FIGS 7.20 and 7.21; PLATE 7.9). The external dimensions were almost exactly 3.3m in both directions, plus or minus 0.15m. Only one post-pit, 2475, of the east-south-east tower was uncovered (FIG. 7.22), assumed to be the north-west corner because of its position and alignment. Behind it, sealed by material presumably from the rampart, was a shallow, U-shaped slot (2480) 0.4m wide and 0.24m deep filled with silty sand. It ran parallel to the rampart for a distance of 2.4m. Its function is unclear but it may have housed supports for steps or some other form of access to the tower. A large pit (2478) 1.6m in diameter on the surface, but rapidly narrowing to less than 0.85m, lay immediately to the south of the slot. Given its depth (1.1m), relatively steep sides and flat bottom, and hints of disturbance filled with demolition material, it may mark the removal of an associated post (FIG. 7.23f). However, a small pit (457) in a similar position to the rear of the north-north-west tower with the same profile, but only 0.9m in diameter and less than 0.25m deep, appeared on the basis of its content to have been dug as part of the demolition process in that area (FIG. 7.21).

7.3.2 INTERPRETATION AND ANALOGIES

Identification of the towers is clear from both their location and form, though surprisingly few timber examples have previously been excavated, presumably because of the limited occasions when lengths of rampart have been stripped. Indeed, the rarity of known examples of towers is such that there has been some uncertainty in the past whether they were a standard provision (e.g. Jones 1975, 92; Manning 1981, 82).

The towers were intended to provide raised platforms at regular intervals around the perimeter of the fort to serve as look-out posts, but primarily to provide the advantage of height for the defenders against any potential attack. An increase in height would increase the killing

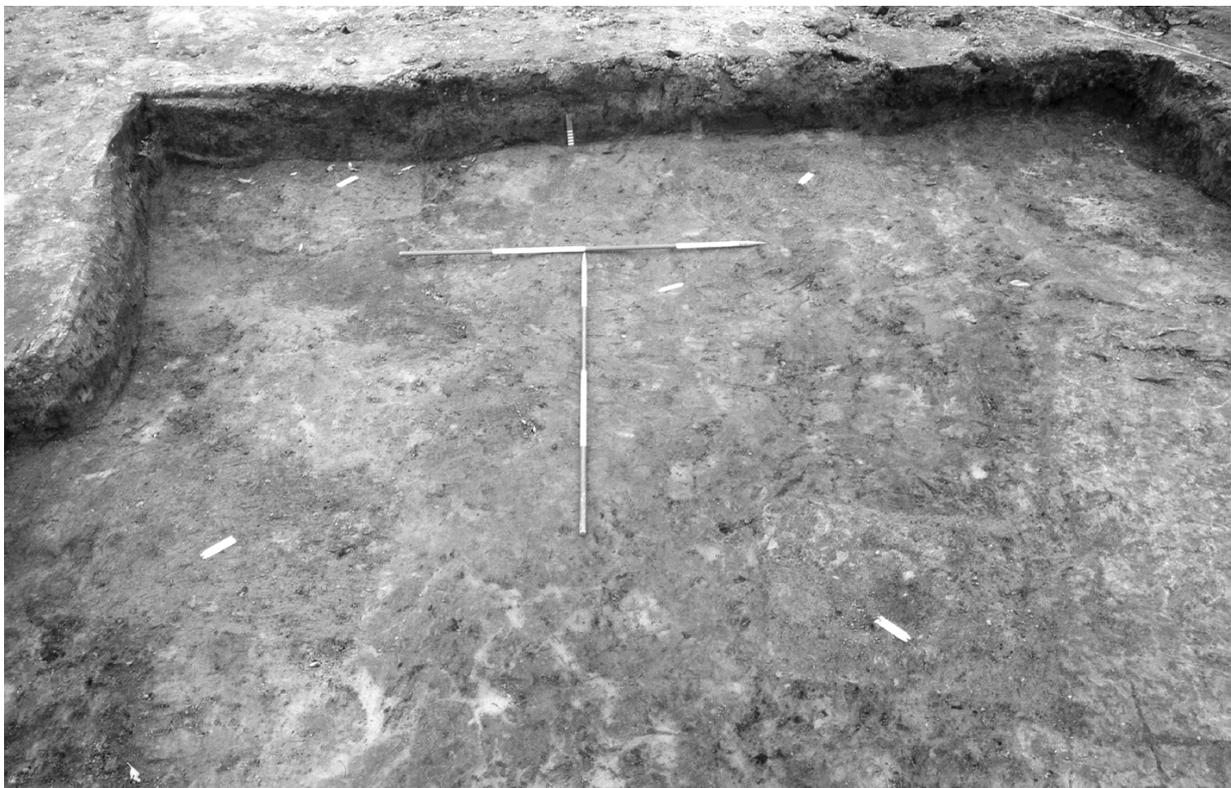


PLATE 7.9 West-south-west interval tower showing rampart material sealing post-pits; view south

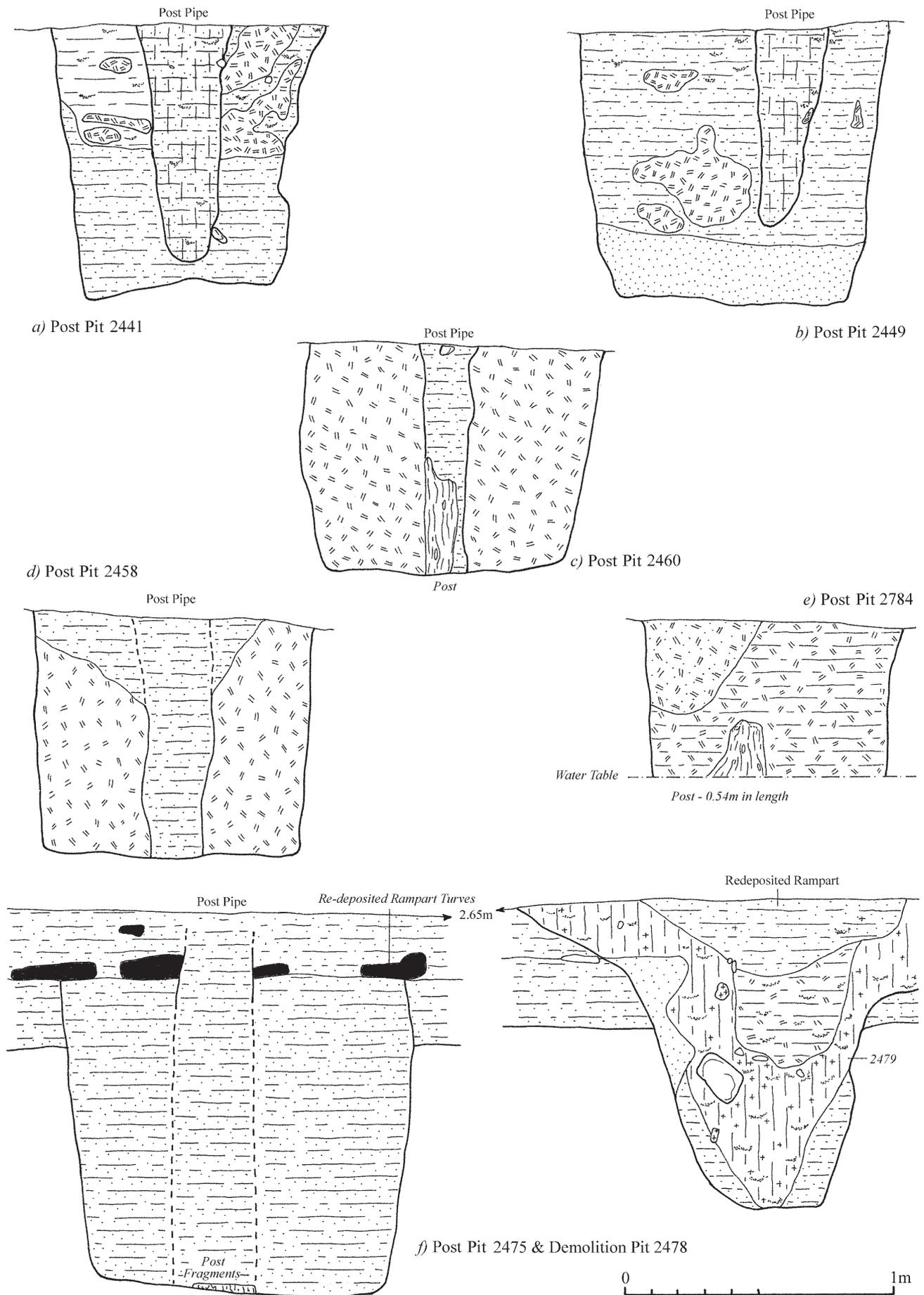


FIG. 7.23 Sections of post-pits in interval and corner towers: a. post-pit 2441; b. post-pit 2449, both south-west corner tower; c. post-pit 2460; d. post-pit 2458, both west-south-west interval tower; e. post-pit 2784, north-north-west interval tower; f. post-pit 2475, east-south-east interval tower and pit 2478

range, particularly for artillery. Though auxiliaries were not normally provided with artillery machines in the first century (Baatz 1966), it is interesting to note in this context the unique discovery of fittings from a hand-held catapult from the site (below 10.5.2, no. 33). That defence was the main function of the towers is confirmed by their close spacing. If the towers on each side of the gateways are included, raised platforms were provided at least every 23–27m around the rampart, measuring from centre to centre of the towers. This compares with a consistent figure of 17.5m at Rottweil (Planck 1975, 53–6) and the slightly more variable distance of 28.5–32m at the legionary fortress at Usk (Manning 1981, 81–2).¹ Such close provision should perhaps call into question whether it was necessary to provide a walkway along the top of the rampart, as is normally assumed, given the absence of any positive evidence for such a structure (above 7.1.2).

The best parallel for the corner towers is provided by the early Flavian fort at Hayton (Johnson 1978, 67–8), with a similar example, though less well published in detail, from the pre-Flavian fort at Hod Hill (Richmond 1968, 72–3). Both of these towers illustrate the same tendency towards a fan- or wedge-shape, which suggests that this may have been the norm. Indeed, in the Flavian forts at Pen Llystyn (Hogg 1968, 116–17) and Künzing (Schönberger 1975) the effect was further enhanced by the provision of only two posts at the rear of the tower. Pen Llystyn also provides the only parallel for an additional post behind the tower thought to relate to the provision of a stairway.

The best parallels for the four-post interval towers are from the pre-Flavian legionary fortress at Usk (Manning 1981, 80–2) and the Flavian fort at Rottweil (Planck 1975, 53–6). These measured respectively 3.1m and 3.5m square externally. The one excavated example from the contemporary auxiliary fort at Pen Llystyn, which has provided close parallels for many of the internal buildings, was unusual in being rectangular and only half the width of the towers at Elginhaugh (Hogg 1968, 117–18).

7.3.3 CONSTRUCTION AND RECONSTRUCTION

The towers were all founded on large timbers set in massive post-pits. The latter were generally square or very nearly so, the maximum dimension ranging from 0.9m to 1.3m, the minimum from 0.8m to 1.26m. The only notable exception was one of the post-pits of the north-west corner tower, which was slightly irregular and measured only 0.7m by 0.65. In a number of cases, particularly in the west-south-west interval tower, the precision and regularity of the pits was quite marked (PLATE 7.9), an archaeological manifestation of the military discipline of the builders. The pits were straight-sided and flat-bottomed, their recorded depths ranging from 0.85m to 1.2m below the bottom of the rampart (FIG. 7.23). In one case (2449) the post-pit appeared to have been partially backfilled with clean sand prior to the erection of the post.

Post-impressions were recorded in several examples, including extant waterlogged timbers (TABLE 7.3; below 10.9.1). The posts were large, up to 0.28m in cross-section, and approximately square where sufficient evidence was recovered. Though both the corner tower posts and the interval tower posts were slightly smaller than the gate timbers, the difference is not as marked as has been noted at other sites (Jones 1975, 92) and does not carry any implications of a height differential between any of the towers. Where timbers were recovered, they proved on identification to be alder. The implications of this are discussed elsewhere (above 7.2.3, below 12.3).

In terms of reconstruction the main debate concerns the likely height of the towers. In order that they might serve any useful function, they must have extended to at least a further storey above the rampart top. On analogy with gateways, this would suggest a total height of 7–7.5m. The illustrations of timber towers in forts depicted on Trajan's Column (Hobley 1982, figs 12.4, 12.5), suggest an open framework for the upper storey very similar to that suggested for the gates.

TABLE 7.3: POSTS IN INTERVAL AND CORNER TOWERS (FIGS 7.19–23)

	Context	Dims (m)	Nature of survival
<i>Interval towers</i>			
WSW	2460	0.24 x 0.24	extant alder
WSW	2462	0.19 x 0.15	extant alder
WSW	2458	0.2	impression in section
ESE	2475	0.28	impression in section
NNW	2775	0.27	impression in section
NNW	2778	0.17	impression in section
NNW	2781	0.19	impression in section
NNW	2784	0.27 x 0.26	extant alder
<i>Corner towers</i>			
SW	2447	0.25	impression in section
SW	2441	0.22	impression in section
SW	2449	c. 0.15	impression in section

7.3.4 STRATIGRAPHY AND PHASING

None of the towers showed more than one phase of construction. All the post-pits were sealed, and in some cases partially filled, by rampart material (FIG. 7.23f; PLATE 7.9), indicating that the erection of the tower posts, like the gate posts, had been one of the primary building activities on site. The examples of extant posts still in situ, to which can be added several others where fragments of timber survived which were too badly degraded to justify their recovery, clearly indicate that the towers were not completely demolished, though the timbers may have been sawn through at the level of the rampart top. The only positive evidence of demolition is provided by the large pit (2478) behind the east-south-east interval tower, which may mark the removal of a post supporting steps or some other form of access.

7.3.5 ASSOCIATED FINDS

2085, post-pit in west-north-west interval tower: 1 piece of flint

2479, demolition fill of pit 2478 by east-south-east interval tower: fragment of a copper-alloy terret (no. 16), double-spiked iron loop (no. 157), oval-sectioned iron handle (no. 183), 20 sherds of coarse pottery including types 46, 140 and 180, 2 sherds of samian, including 1 decorated (D16), 2 sherds of mortarium, 6 fragments of glass (jar and bottle), 1 melted, several fragments of cattle and sheep/goat teeth, nail

456, fill of demolition pit 457 at rear of north-north-west interval tower: 1 sherd of coarse pottery, 3 sherds of amphora, 1 fragment of bottle glass, daub, charcoal

Note

¹ The distances quoted here have been amended from those in the original publications to allow for measurement from centre to centre of the towers.

7.4 ROADS AND DRAINS

7.4.1 DESCRIPTION

Roads

Although their surface metalling rarely survived, the roads within the fort were, in places, surprisingly well preserved. Indeed, the discovery of the site was brought about by the recognition of elements of the road pattern revealed as parchmarks in a pasture field (PLATE 1.1; above 1.1). Only in the eastern *retentura* had the plough removed all traces of most of the roads, though even here the *via sagularis* was largely preserved where the ground sloped away to the north-east. The roads were not extensively examined in any detail. Most were reasonably apparent after initial cleaning of surfaces following machine clearance of topsoil. Thereafter investigation was limited to determining their edges, where these were in doubt, and selective sectioning.

The road pattern was quite standard (FIG. 12.3). The *via principalis*, 6.5m wide, ran between the East and West Gates, bisecting the fort and forming a T-junction with the *via praetoria* immediately in the front of the *principia*. The 5.5m wide *via praetoria* would have been nominally the main road into the fort, but the South Gate from which it led was inconveniently situated on the edge of a steep scarp. Clearly, the *via principalis* must have served as the main thoroughfare and was, in fact, a continuation of Dere Street, the main Roman road into Scotland up the east side of the country. Outside the fort to the east, immediately beyond the outer ditch, the line of this road widened and veered to the north (FIG. 7.4). Either the road was heading for a more convenient crossing of the North Esk, perhaps in the vicinity of the modern bridge, or it was about to bifurcate in order to enter a possible small annexe (above 7.1.2). To the west it continued through the main annexe, swinging very slightly to the north as it passed through the ditches before returning to its original alignment. At the rear of the fort the gap between the ends of the barracks suggests that the *via decumana*, running from the North Gate to the *principia*, would have been up to 6m in width, but only occasional patches of metalling survived the plough. It seems likely that there was no provision of a *via quintana*. This should have run parallel to the *via principalis* to the rear of the central range of buildings, but was excluded presumably because of the limited space within the *retentura*. It is just possible that selective plough erosion may have removed all traces of its metalling also, for there was an appropriate, if rather narrow, gap some 3m wide in the line of buildings, but the location of three large pits (75, 111 and 1046) between the *praetorium* and Barrack 2 preclude its use as a regular thoroughfare, at least for vehicular traffic.

The *via sagularis* mirrored the inside of the rampart all around the fort. Though nominally as much as 7m wide in places, various constrictions reduced this width. As a result it would have been difficult to take a wheeled vehicle continuously around the perimeter. The inward projection of the rampart at all four gates reduced the width of the *via sagularis* to as little as c. 1.4m on the southern side of the West Gate, and to c. 3–4m at the North Gate and on the southern side of the East Gate. Despite the fact that the rampart had been cut back to accommodate it, the *fabrica* narrowed the adjacent road to 2.3m in the north-east corner, while the ovens in the south-east and south-west corners reduced passage to a width of c. 3.5m and 2.5m respectively.

There were also a number of minor roads within the fort without specified names, though some were wider than elements of the *via sagularis*. Almost all of the pairs of barracks faced each other across a road, usually some 5m wide. The exception was Barrack 5 which stood alone backing onto the *via sagularis* and facing the back of Barrack 6 across a road only 3.2m wide. Finally, in the centre of the fort, the *principia* was separated from the *praetorium* on one side and the granaries on the other by roads 4m wide.

Drains

The fort was reasonably well served by drains, though the complete system was not uncovered for, like the roads, the drains were not comprehensively sought (FIG. 7.24). The buildings within the fort were situated on an almost level plateau, which fell away gradually towards the north-eastern quadrant. Clearly, given the number of times the north wall of Barrack 3 had been repaired, the major drainage problem during the occupation of the fort was in the north-east corner. Ironically, that area seems originally to have been relatively ill-provided with drains, with only one small section of primary drainage gully noted alongside the outer edge of the *via sagularis*, though more may have been lost to the plough.

The main focus of the drainage system seems to have been the central range of buildings, particularly the *principia* and *praetorium*. Drains ran around three sides of the latter and probably entirely surrounded the former, apart from a break at the entrance (FIGS 4.1 and 4.3). It is not clear exactly how these led water away from these buildings for, though the two systems were connected along the frontage with the *via principalis*, that drain was not traced westwards beyond the south-west corner of the *praetorium*. Interestingly, the drain along the eastern side of that building abutted, but did not connect into, the drain along the *via principalis*. Presumably the drains on the eastern side of the *praetorium* and the rear of the

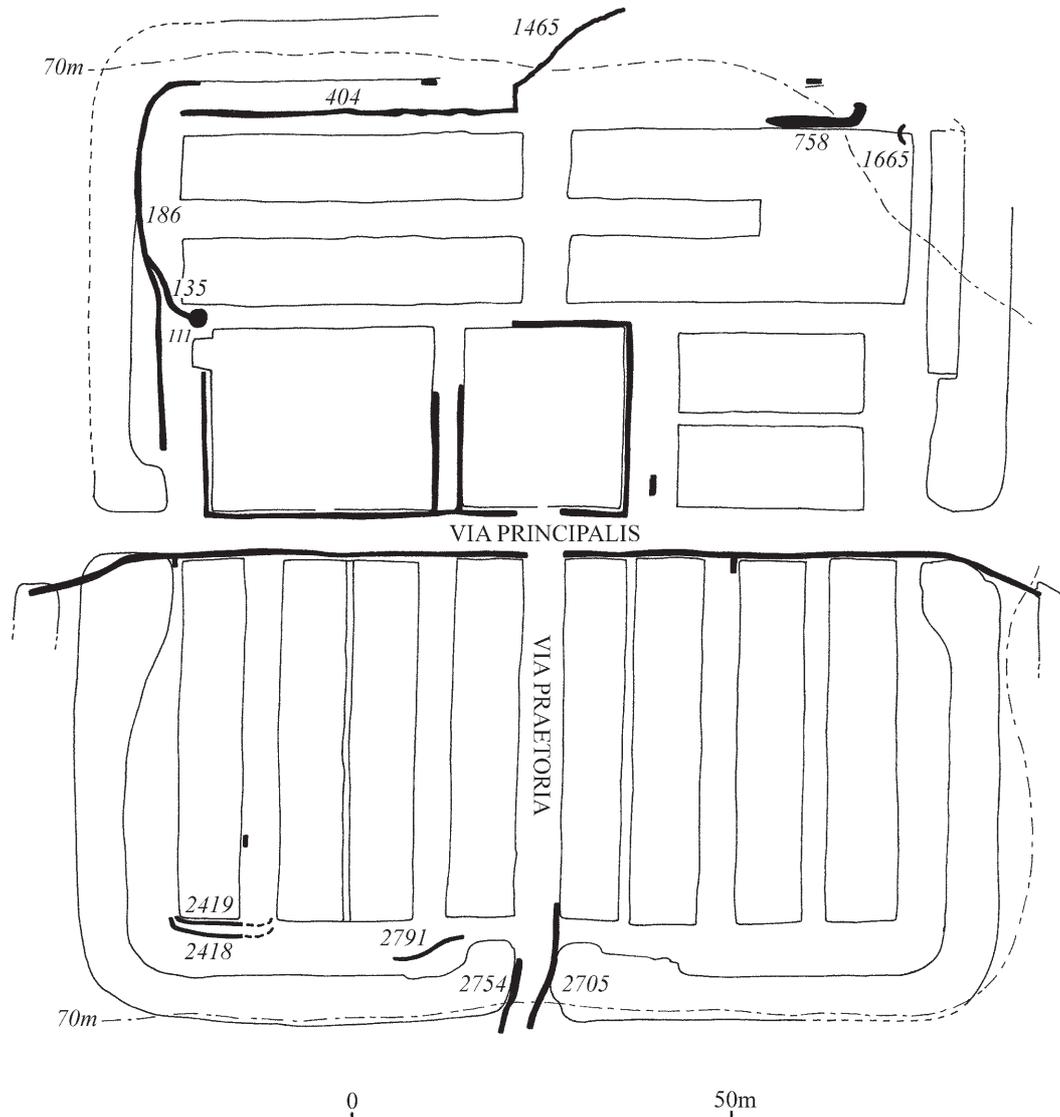


FIG. 7.24 The pattern of drains within the fort

principia were linked into a system draining to the north, whose other elements did not survive the plough. Good drainage provision around the granaries might also have been expected, but there was no drain along the *via principalis* on their southern side. One badly damaged fragment of drain recorded by the south-west corner of Granary 1 hints at some provision, but most other traces in that area are likely to have been removed by the plough.

Drains ran east and west along the south side of the *via principalis* from either side of the *via praetoria*, draining out through the East and West Gates, following the edge of the rampart and issuing into the inner ditch (FIGS 7.4 and 7.6; PLATES 1.4 and 7.10). This provision drained the northern ends of all the barrack blocks in the *praetentura*, though at only one point, on the west side of Barrack 6, was there any sign of a connecting drain running alongside any of those barracks. How far down the length of the barrack this continued was not established. In addition, one fragment of drain was recorded alongside the officers' quarters on the eastern side of Barrack 12, though this is more likely to have drained to the south, perhaps linking into one of the open gullies at the south end of that block. A T-junction identified in the drain (1186) at the rear of the West Gate (FIG. 7.12; PLATE 7.10) suggests that there may have been some provision for drainage along the back of the rampart opposite Barrack 12. It is uncertain how long-lasting or effective these arrangements to drain the *praetentura* were, since the drain through the East Gate was cut away by a deep slot (1851) which blocked the gate and was not subsequently reinstated (FIG. 7.11), while that through the West Gate seems to have been cut away by a post-pit (2091) of phase 2 (FIG. 7.12; above 7.2.4). A drain (2705) also ran out through the east side of the South Gate (FIG. 7.9), apparently originating by the south-west corner of Building 8. A second apparently unlined drain (2754) starting by the threshold of the same gate on the west side of the road must originally have been lined with timber if it was to work at all.

Drainage provision in the north-west corner of the fort was slightly more complex. An apparently unlined drainage gully (186) ran around the outer edge of the *via sagularis*, starting just to the north of the West Gate, and was joined by a stone-lined overflow channel (135)



PLATE 7.10 Drain 1186 with T-junction at rear of the West Gate, partially disturbed by second phase of post-hole 2095; view west

from a large cess pit (111) located at the rear of the *praetorium*, before continuing towards the inner corner of the rampart (FIG. 7.31). Thereafter its course becomes uncertain. It may have joined a similar gully (404), presumably originally timber-lined, which ran under the centre of the *via sagularis* alongside Barrack 1 (FIG. 7.21). This in turn probably connects with a further gully (1465) issuing out of the west side of the North Gate (FIG. 7.10).

Secondary and more localised open drains were constructed at several points to combat particular problems. A large drainage gully (758) was dug through the *via sagularis* parallel to the north wall of Barrack 3 after the latter was repaired (FIG. 5.4). The gully drained from west to east, increasing in depth as it did so, and was presumably intended to drain water away from the adjacent barrack wall. Similarly, a shallow gully (1665) which originated against the inside of the end wall of the block and curved away to the north, cutting across the major repair trench for the outer wall of Barrack 3, seems best interpreted as a further attempt to improve the drainage away from, or rather out of the building in this corner, since the slot seems to have been cut through the base of its outer wall. In the south-west corner of the fort a double line of U-shaped gullies (2418 and 2419), which superficially resembled cart tracks, are best interpreted as drainage features located to ensure that the bank of ovens remained dry (below 7.5). A similar single gully (2791) was associated with a second smaller group of ovens adjacent to the South Gate (FIG. 7.19).

7.4.2 INTERPRETATION AND ANALOGIES

Roads

The road pattern within the fort was quite standard, the only probable omission being the *via quintana* (FIG. 12.3). It was surprising, however, that unimpeded access around the perimeter was constrained by restrictions to the width of the *via sagularis*, the worst of which could have been avoided by a minor reduction in the spacing between barracks in the *praetentura*. Theoretical concerns about buildings being located at a safe distance from the defences in order to protect them from possible projectiles, as expressed by Polybius in relation to the laying out of camps (*Historiae* 6), may not necessarily have been adhered to in practice, though it could be argued that the areas where the buildings were nearest to the ramparts coincided with the position of gate and corner towers, thus minimising the potential problem.

The overall layout of the fort was very compact, not to say cramped. Though emphasis has been placed on the potential restrictions to movement, access to all parts of the fort by vehicular traffic would still have been relatively straightforward, even if it involved passing between facing barracks. It is particularly noticeable that, both in terms of location and the provision of roads, ready access to, and free flow of movement around, the granaries was assured.

The overall pattern of the internal roads is readily paralleled at the contemporary forts at Pen Llystyn in north Wales (Hogg 1968) and Fendoch in Perthshire (Richmond and McIntyre 1939), and in the slightly later stone fort at Gellygaer in south Wales (Ward 1903). In all three cases the same tripartite division without any substantive *via quintana* is apparent, along with relatively wide roads between facing pairs of barracks. The latter would have been particularly important between stable-barracks to facilitate the movement of large numbers of horses.

Drains

The provision of a system of drains within Roman forts is normal practice, though the nature and extent of the provision is to some extent site dependent and, therefore, site specific. However, the impression given by the considerable structural problems encountered in the north-west corner of the fort, where the north wall of Barrack 3 was replaced at least twice (above 5.2.4), is that the local topography was not adequately taken into account in designing the drainage system. On the other hand, there is one factor that may indicate the builders' awareness of the potential problem. Drains may be no more than open gutters, or they may be more formally constructed and lined either with timber or stone, the material usually equating with that used in the construction of the fort. Timber linings are presumed, therefore, to have

been the norm in Flavian forts in northern Britain. They survive all too rarely, though excellent examples have been uncovered at Carlisle (Charlesworth 1980, 201–7) and Vindolanda (Birley 1994, 36–7, 54). The provision of stone-lined drains in an otherwise timber-built fort is rather unusual. Even the legionary fortress at Inchtuthil was only partly provided with stone-lined drains, though the excavators claimed that others may have been intended but were never installed before the site was abandoned (Pitts and St Joseph 1985, 100). The provision of such drains at Elginhaugh parallels the unique use of stone for the footings of the *fabrica* (above 5.3). There is no reason to suggest that this is indicative of any intended longevity for the site, though it may indicate some recognition that drainage might be a problem. It may also be worthy of note that the stone-lined drains are found primarily in the centre of the fort along the *via principalis* and around the buildings of the central range, particularly the *principia* and *praetorium*. Concern to ensure that this area was well-drained may have less to do with pragmatism and more to do with the social status of its primary occupants.

Classical authors recommend the collection of rainwater to supplement the water supply (e.g. Vitruvius *de Arch.* 8, 2; Vegetius *Epit. Rei Milit.* 4, 10), but examples in a military context are not common. There is debate about the extent to which the flushing of the latrine from the elaborate system of tanks in the south-east corner at Housesteads depended upon rainwater (Smith 1976). At Elginhaugh no distinction appears to have been made between surplus rainwater and the overflow from a latrine pit, for the two elements were linked at the rear of the *praetorium* (above 4.2.1). Moreover, analysis of the macroplant remains hinted at the possible presence of cess in both the inner north and east ditches (1470 and 891) (below 11.2), though the sample from the former was not taken from the side of the North Gate to which the drain appeared to lead. In laying the drains to discharge any outflow into the fort ditches, as is clearly attested at all four gates, the builders of Elginhaugh were following normal practice. At Bearsden examination of the inner ditch of the annexe indicated that it was full of cess channelled out from the adjacent latrine (Knights *et al.* 1983).

7.4.3 CONSTRUCTION AND RECONSTRUCTION

Roads

Six main sections were cut through roads within the fort: two through the *via principalis*, just outside the East Gate and alongside the *principia*; one through the road between Barracks 1 and 2; and three through the *via sagularis*, two adjacent to the *fabrica* and one at the end of Barrack 12. In addition roads were partially sectioned in a number of places. A similar mode of construction was revealed in all cases, though with some minor variations (FIGS 7.18a, 7.25 and 7.28). The *via principalis* was the most solidly constructed with a gravel make-up layer some 0.4–0.6m thick beneath a surface of rammed gravel and small pebbles 0.3–0.6m in depth, though rarely was the actual surface preserved and only the make-up layer survived in the centre of the fort. A similar construction was evident in one section across the *via sagularis* in the north-east corner, with a make-up layer 0.18m thick beneath an upper layer at least 0.2m thick. However, at the South Gate and by Barrack 12 the road consisted of a single layer of compacted gravel up to 0.18m thick. Similarly, the road between Barracks 1 and 2 survived as a single layer of gravel 0.1m thick. The roads had been laid directly upon the contemporary ground surface and in two cases, outside the *praetorium* and at the South Gate, turf-lines were preserved beneath them. In addition, ard marks were evident beneath the cultivated soil sealed by the *via sagularis* adjacent to the *fabrica* (above 3.1). In two cases, by the East and South Gates, stone artefacts (quernstones and a sandstone vessel) were used in the make-up of the road (below 7.4.5).

Drains

Most of the drains within the fort were constructed of rough sandstone slabs forming a channel some 0.25–0.4m square internally (FIGS 7.25, 7.26; PLATE 7.10). The basal slabs were set in

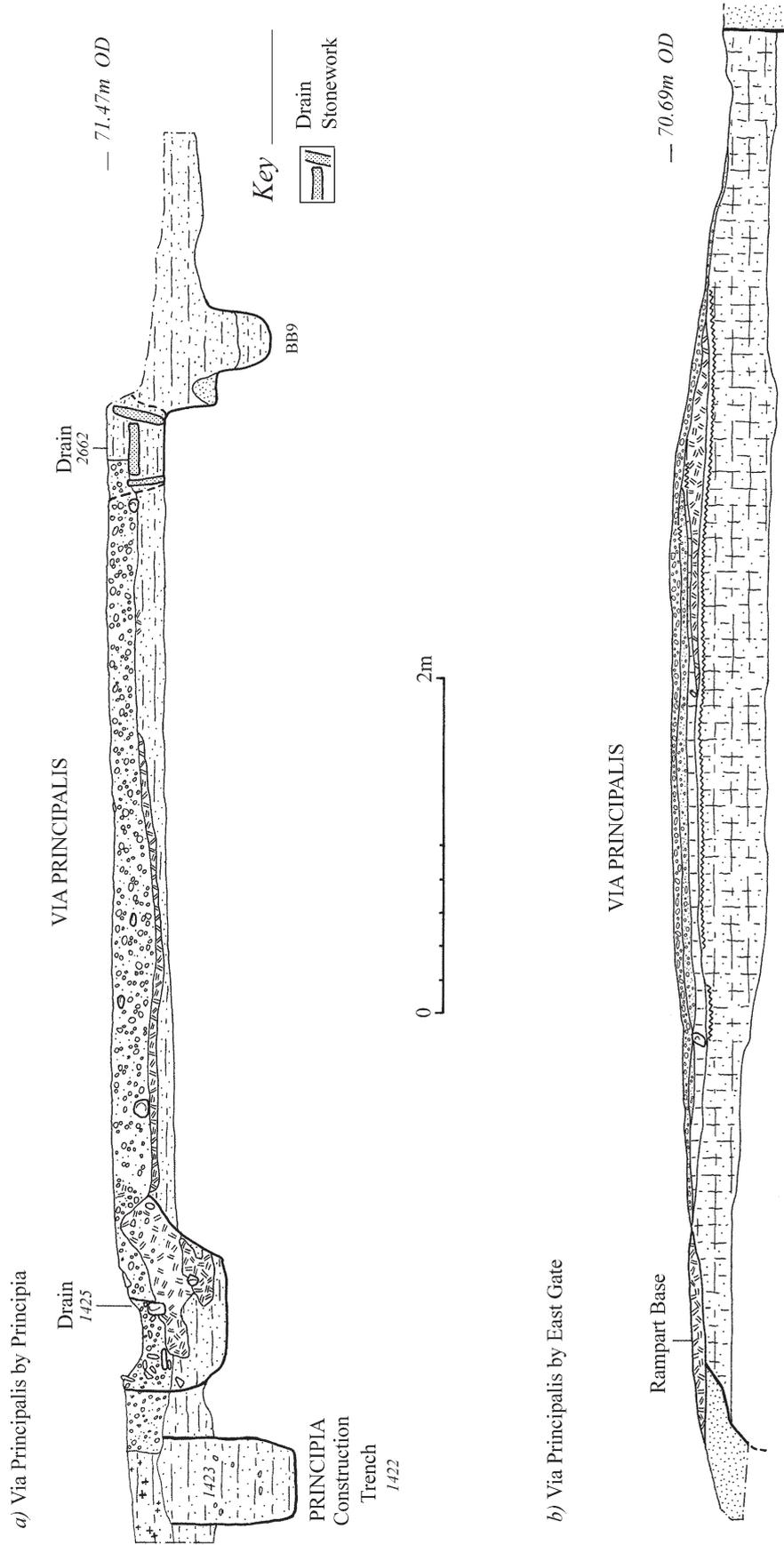


FIG. 7.25. Road sections within the fort: a. *via principalis* by *principia*; b. *via principalis* by East Gate

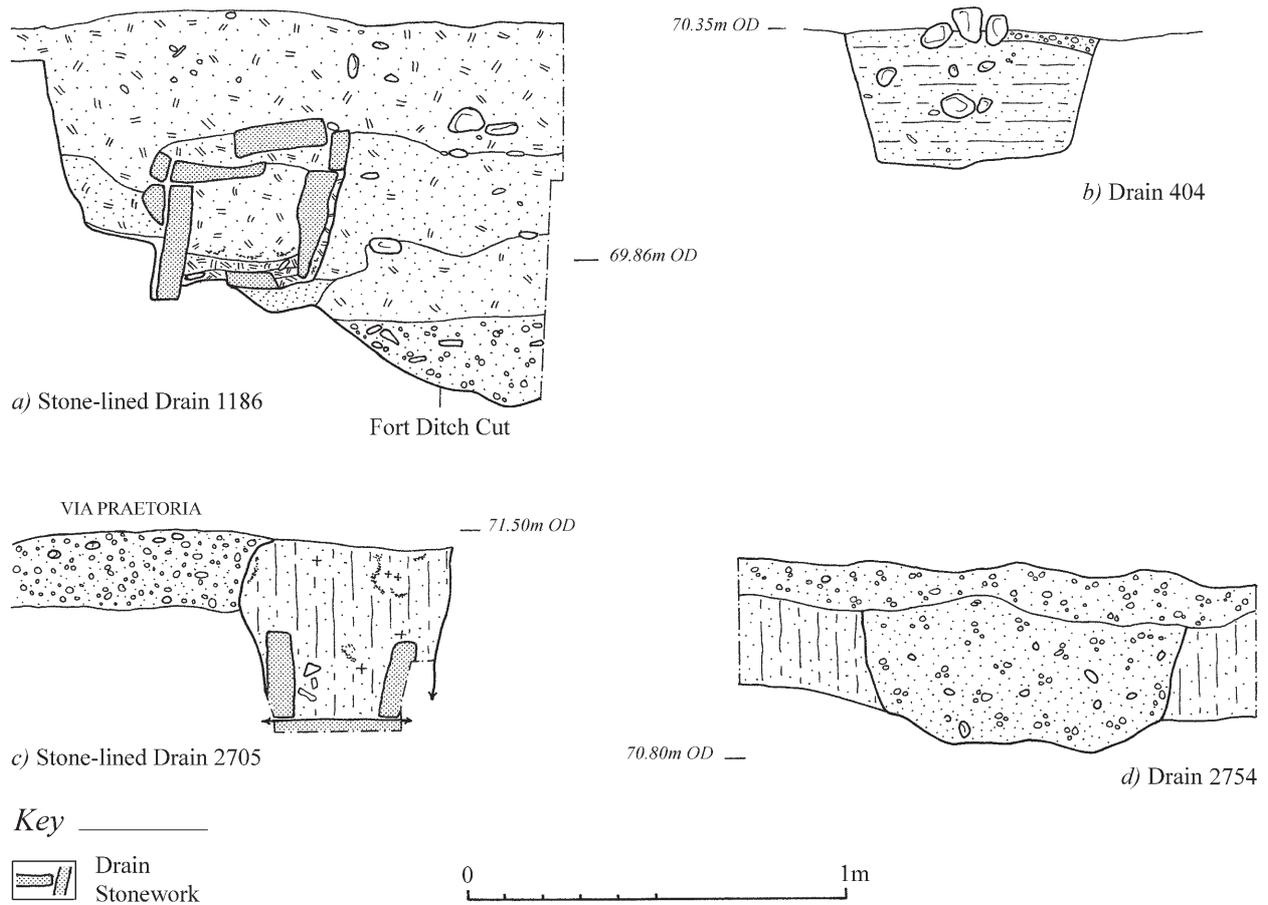


FIG. 7.26 Sections through drains: a. drain 1186 outside the West Gate; b. drain 404 beneath *via sagularis* north of Barrack 1; c. drain 2705 at South Gate; d. drain 2754 at South Gate

purple clay, presumably to ensure that water did not undermine and displace them. Since capstones tended to survive only in the more deeply buried sections, it is not absolutely certain that the roadside drains were totally enclosed. This is assumed to have been the general case, however, since open drains are both an inconvenience and a potential hazard, though the presence of demolition material in a number of them may suggest otherwise. Most of the drains around the north-west perimeter of the fort (e.g. 404) contained no stone slabs. These may simply have been open gullies or any stone lining may have been robbed or removed by the plough. No such explanation, however, can be applied to the drain (2754) leading out of the west side of the South Gate, which was sealed by the *via sagularis* (FIG. 7.26d), so at least some of these drains must have been timber-lined.

The secondary drains were less regularly constructed and were, for the most part, probably just open gullies. Those to the north of the ovens in the south-west quarter of the fort were *c.* 0.5m wide and up to 0.22m deep (FIGS 7.27 and 7.28), while that by the north wall of Barrack 3 (758) averaged 0.3m in depth and varied in width from 0.6 to 1.6m.

7.4.4 STRATIGRAPHY AND PHASING

Roads

The laying down of the roads clearly came late in the sequence of construction within the fort. Not only did they seal the drains wherever these were examined, but could be shown to overlie the construction trenches of a number of the internal buildings. One partition trench in Barrack 1 continued beyond the line of the outer wall beneath the road separating it from Barrack 2 (above 5.1.3). The metalling of the *via sagularis* overlay construction trenches in several places: at the south end of Barracks 5–7 and 12 (above 6.1.3, 6.4.3), on the west side of the outhouse attached to the *praetorium* (above 4.2.3) and on the west of the *fabrica* (above 5.3.4). Similarly, metalling of the *via principalis* continued across the ends of the trenches at the entrance to the *principia* (above 4.1). The picture is clearest at the gates where the sequence of construction is generally as follows: the digging of the post-pits was followed by the erection of the posts within them, the construction of the rampart, the laying out of the drains (see below), and finally the laying down of the road surface (above 7.2.3).

Plough action had severely damaged the surface of the roads in most places where they were investigated. At only one point within the fort, just inside the East Gate, were possible wheel ruts recorded in the form of differential wear patterns on the road surface. The U-shaped gullies (2418 and 2419) in the south-west corner of the fort, which superficially resembled wheel tracks, were too deep and irregularly spaced to be explained in that way (below 7.5.2). However, there was evidence that at least some of the roads had been repaired, for example at the West Gate where two gravel layers (2125/2126) up to 0.3m thick were separated by a layer of compacted sand 0.15m deep (FIG. 7.18a), though none showed the extent of resurfacing apparent in the annexe. Material from the demolition of the fort buildings had been spread over the roads in a number of places, particularly across the west side of the fort.

Rather rough secondary metalling was preserved both within the portals and immediately outside them on the north side of the east gateway (943) and inside them on the south side of the west gateway (1158) (FIGS 7.16, 7.17 and 7.18a; PLATE 7.7; above 7.2.4). In both cases this was difficult to distinguish from the cobbling of the secondary extensions to the rampart base, but tended to contain a higher proportion of smaller pebbles. Small patches of secondary metalling (2787) were also noted within the portals of the South Gate, concentrating on the east side, which presumably represent all that remains of a more extensive resurfacing of the road there (FIG. 7.9). This resurfacing must relate to the secondary use of the fort enclosure, for it overlies the corner of Barrack 12 just inside the West Gate (FIG. 7.17). Similarly, the widening of the *via principalis* immediately inside the East Gate extended to the south over the ends of both Barracks 5 and 6 by at least 2m, and to the north over the southern post-hole of the loading bay at the east end of Granary 1 (above 4.3.4), though the full extent of this cobbling is not recorded on FIG. 4.6 as it was, unfortunately, removed before it had been planned in its entirety.

Indeed, there are frequent, if scattered, traces of secondary cobbling throughout the fort, suggesting that many of the roads were extended, or even that much of the interior was cobbled over after the demolition of all the internal buildings (below 12.1). Similar widening of the *via principalis* is evident at its western end where rough cobbling (198) spread out across the area of the demolished *praetorium*, where it had subsided into several pits (above 4.2.4). Finally a cobbled surface (1618) extended the *via sagularis* over the north-east corner of Barrack 3 (above 5.2.4) and a similar one (1598) covered the south-west corner of Barrack 11 (above 6.4.4).

Drains

The construction of the primary drains probably came relatively late in the sequence of building on the site. They appeared to respect the internal buildings, as if construction of the latter was already underway prior to the laying down of the drains, but were in most cases overlain by road metalling. The sequence of construction is most apparent at the gates, as noted

above. The drains clearly cut through backfilled post-holes at the North, West and East Gates, as was also noted at Fendoch (Richmond and McIntyre 1939, 115–16). Thereafter their use seems to have been surprisingly short-lived, since at both the East and West Gates the drains were cut through by alterations to the gate structure (e.g. FIGS 7.11 and 7.12; PLATE 7.10) and apparently not reinstated. That the open gullies in the north-east and south-west corners are secondary is clear, since they were all cut through the *via sagularis*, and one cuts through the construction trench of the outer wall of Barrack 3. However, the drain (1425) at the south-west corner of the *principia* seems to have been cut through road make-up (FIG. 7.25a).

7.4.5 ASSOCIATED FINDS

Roads

Most of the artefacts supposedly associated with the roads should, more correctly, relate to the sealing layer (e.g. 1756 and 839 where the finds probably relate to the demolition deposits above). However, two Iron Age quernstones recorded as coming from disturbed rampart material (920) sealing the *via sagularis* by the East Gate were, in fact, partly embedded in the make-up of the road, and a sandstone vessel was used in the make-up for the *via praetoria* at the South Gate. The various patches of secondary cobbling, on the other hand, frequently sealed artefacts on the surface of a road beneath, or contained re-used material, particularly lava quernstone fragments and bricks. These finds are referred to as appropriate in the discussion of particular structures (e.g. above 4.3, 5.1, 5.2, 6.1, 6.3, 6.4 and 7.2, and below 7.5).

Road metalling

- 408, patches of gravel make-up of *via decumana* north of *principia*: 1 nail, lava quern fragment
- 410, *via sagularis* north of Barrack 1: 1 nail
- 628, *via sagularis* to west of Barracks 1-2: as of Vespasian (no. 24), 1 sherd of mortarium, 1 hobnail
- 765, make-up of *via sagularis* at north-east corner: 5 sherds of coarse pottery, including types 76 and 142, 4 fragments of bottle glass (one conjoins with a fragment from fill of drainage gully 758, Barrack 3)
- 839, *via principalis* by *praetorium* sealed by demolition spread 802 (above 4.2.5): several pieces of iron plate, either *lorica segmentata* or box fittings (no. 218), unidentifiable lead, 1 sherd of coarse pottery, over 25 sherds of amphora, including 1 Dressel 38, nails, charcoal, daub
- 1058, *via sagularis* to west of *praetorium*: 3 sherds of coarse pottery, over 25 sherds of amphora, 1 piece of flint, 1 nail, 1 piece of copper-rich vitreous material, 1 fragment of shell
- 1150, *via principalis* by West Gate: 1 sherd of amphora
- 1258, *via principalis* to south of granaries: 4 sherds of coarse pottery
- 1261, *via sagularis* at south-east corner of Granary 1 (sealed by later cobbling 1268): 2 sherds of coarse pottery, several sherds of amphora, 3 sherds of mortarium, 1 nail
- 1352, road between Barracks 5 and 6: 1 sherd of amphora, 1 sherd of plain samian
- 1353, *via sagularis* at south-east corner sealed by later cobbling 1354 (see below 7.5): unidentifiable copper alloy, 4 sherds of coarse pottery including type 144, 1 sherd of plain samian, 2 nails
- 1386, *via sagularis* to east of Barrack 5: 12 sherds of coarse pottery, 4 sherds of amphora
- 1434, *via principalis*: 2 sherds of coarse pottery, including type 83, 1 piece of flint
- 1467, road make-up, North Gate: 1 sherd of coarse pottery, type 140, 1 sherd of mortarium
- 1532, surface of road between Barracks 11 and 12: 15 sherds of coarse pottery, 6 sherds of amphora, 2 fragments of glass (bottle and pillar-moulded bowl), 2 pieces of brick, lava quern fragments, 3 fragments of burnt animal bone
- 1648, *via sagularis* at north-east corner: 2 sherds of coarse pottery, 1 sherd of mortarium
- 1756, *via sagularis* by South Gate sealed by demolition spread 1534: small copper-alloy bow brooch (no. 3), copper-alloy vessel handle (no. 68), small iron spearhead (no. 119), tip of iron knife blade (no. 170), iron rod (no. 209), unidentified iron object, unidentifiable lead, over 50 sherds of coarse pottery, including types 10, 12, 33, 78, 102 and 144, over 90 sherds of amphora, 1 sherd of mortarium, 3 sherds of plain samian, 4 fragments of glass (cup/beaker, bottle), 7 pieces of brick, 1 nail, 2 pieces of animal bone, 2 flints, daub

2661, *via sagularis* to south of Barrack 7: pair of iron tweezers (no. 163), 7 sherds of coarse pottery, 3 sherds of amphora, 1 sherd of plain samian, 1 piece of glass jug, fragment of lava quern, 1 piece of flint

2730, *via praetoria* at South Gate: large sandstone vessel (no. 244)

Demolition spreads

1534, demolition layer above *via sagularis* (1756) in south-west corner: *as* of Vespasian (no. 12), 2 *asses* of Domitian (nos 40 and 43), copper-alloy razor handle (no. 63), copper-alloy vessel handle (no. 69), iron chisel (no. 138), three iron double-spiked loops (no. 158), part of iron cauldron chain (no. 177), over 100 sherds of coarse pottery, including types 58, 65, 78, 80, 102, 140, 153, 176 and 203, over 50 sherds of mortarium, some 100 sherds of amphora, 5 sherds of plain samian, 15 fragments of glass, including pillar-moulded bowls, conical glass beakers, bottles, jar, and a tubular rimmed bowl, 1 glass counter, 11 nails, 2 pieces of burnt animal bone, charcoal

1537, demolition layer above *via sagularis* (628) north of West Gate: 6 sherds of coarse pottery, 9 sherds of mortarium, 12 sherds of amphora, 14 pieces of brick, 1 piece of daub

Drains

Most of the finds from drains derive from demolition infilling. Fills from secondary gullies (e.g. 758) are considered in relation to the structures with which they are associated.

153, fill of drain 40 along west side of *praetorium*: head of copper-alloy pin (no. 96), 20 sherds of coarse pottery including type 107, lava quern fragment, daub

190 and 1089 fills of drain 186 by metalworking area north of West Gate: 10 sherds of coarse pottery including types 75, 151 and 190, 1 sherd of amphora, 2 pieces of bottle glass, much charcoal, daub

202, fill of drain 201 east side of *praetorium*: large conical iron protective 'shoe' (no. 197)

205, drain west side of *principia*: 1 sherd of coarse pottery, type 198

403 and 406, fill of drain 404 north of Barrack 1: iron shield boss (no. 113), some 65 sherds of coarse pottery, including types 38, 58, 62, 140, 159, 179 and 198, over 100 sherds of amphora, 1 sherd of plain samian, 2 nails, daub

463 and 1466, fill of drain 1465 issuing out of North Gate: over 25 sherds of coarse pottery, including types 58, 59, 61, 62 and 124, 8 sherds of amphora, 2 sherds of mortarium, 7 sherds of samian, including 2 decorated (D4 and 33), 2 nails, 4 fragments of burnt animal bone, daub

491, construction trench for drain 493 by south-east corner of *principia*: 2 sherds of amphora

492, fill of drain 493 by south-east corner of *principia*: possible iron barb-spring padlock (no. 149), 6 sherds of mortarium

534, fill of drain 535 on east side of *principia*: 8 sherds of coarse pottery, 6 sherds of mortarium

800, fill of drain 1601, north-east corner of fort: daub

769, silt build-up over drain 1601, north-east corner of fort: 8 sherds of coarse pottery, including types 24 and 76, 1 piece of bottle glass, several fragments of burnt animal bone, quantities of charcoal

934, fill of drain 933 by East Gate: socket of iron spearhead or tool (no. 122), 19 sherds of coarse pottery, 1 sherd of amphora, 2 pieces of bottle glass, 1 piece of flint

1187, fill of drain 1186 through West Gate: 1 sherd of burnt coarse pottery, 1 piece of flint, charcoal

1425, drain by south-west corner of *principia*: 1 sherd of plain samian

2739, fill of drain 2705 through South Gate: curved iron strip tapering to a hook (no. 192), 1 sherd of coarse pottery, 2 sherds of mortarium, 1 piece of bottle glass, 1 nail

7.5 OVENS AND OTHER *INTERVALLUM* FEATURES

7.5.1 DESCRIPTION

Ovens

Ovens occurred in groups, usually of two or more, around the perimeter of the fort, though the poor preservation of some examples made precise calculation of the total number difficult (FIG. 12.3). They were usually set against the back of the rampart and in some cases seem to have been slightly recessed into it. Most of the ovens were situated in the *praetentura*, matching the

concentration of barrack blocks: a bank of five, four of which were very well-preserved, in the south-west corner; two pairs on either side of the South Gate; a group of two or possibly three in the south-east corner; and a further possible single example just to the north of that group (FIGS 7.19, 7.22, 7.27 and 7.29). Only one group of ovens was recorded in the *retentura*, a bank of two or possibly four situated against the back of the western rampart opposite the western end of Barrack 2 (FIG. 7.31). A group of two or more might have been expected in the north-east corner, but the east side was taken up by the *fabrica*. Any examples located at the back of the north rampart are unlikely to have survived the plough, as indicated by the structural ceramic material recovered from the slight traces of the rampart core (below 10.9.3, 462 AG). A further small oven (959) did survive in a fragmentary state behind the north tower of the East Gate (FIG. 7.16), but its position blocking the *via sagularis* by one of the granaries suggests that it was a secondary feature, as clearly were the examples overlying the *via sagularis* by the west-south-west interval tower (2432) and the northern end of Barrack 9 (1544, 1546) in the centre of the fort (see below).

The best-preserved group of ovens were the four in the south-west corner (2403, 2405, 2407 and 2409) (FIGS 7.19, 7.27 and 7.28; PLATE 7.11). They were circular or oval in plan, at least 1.6m and up to 2.1m in internal diameter, the larger dimensions running from front to back. Each oven was provided with a projecting, approximately rectangular, stone platform or hob at the front measuring *c.* 1.1–1.8m wide by 0.8–1m deep (e.g. 2413), around which was a halo of ash and charcoal debris up to 0.9m in diameter. The two central ovens faced north, while those



PLATE 7.11 Bank of ovens 2403, 2405, 2407 and 2409 and associated features, dry-stone wall 2417 and gully 2418, in south-west corner; view west

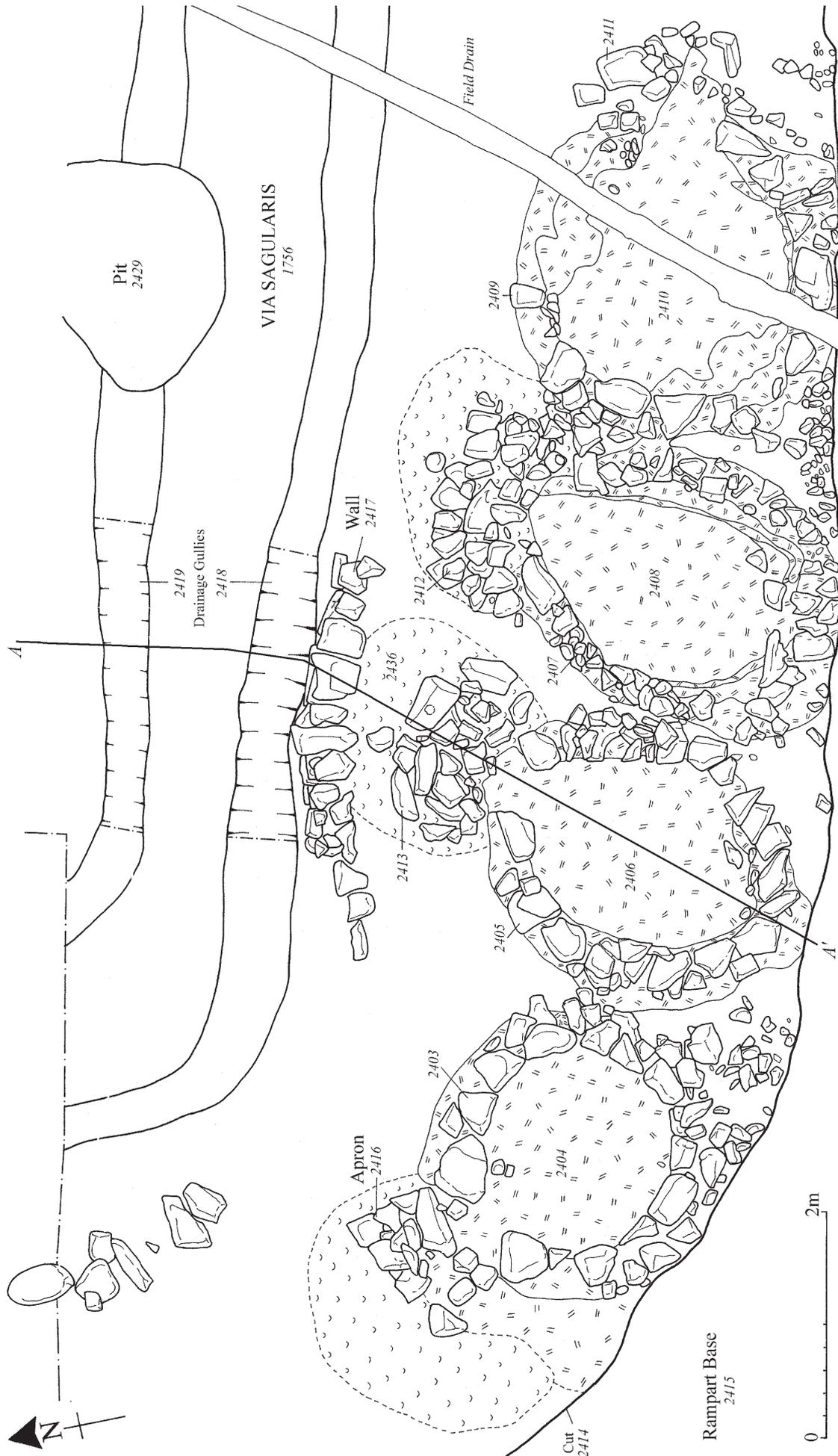


FIG. 7.27 Detailed plan of ovens in south-west corner

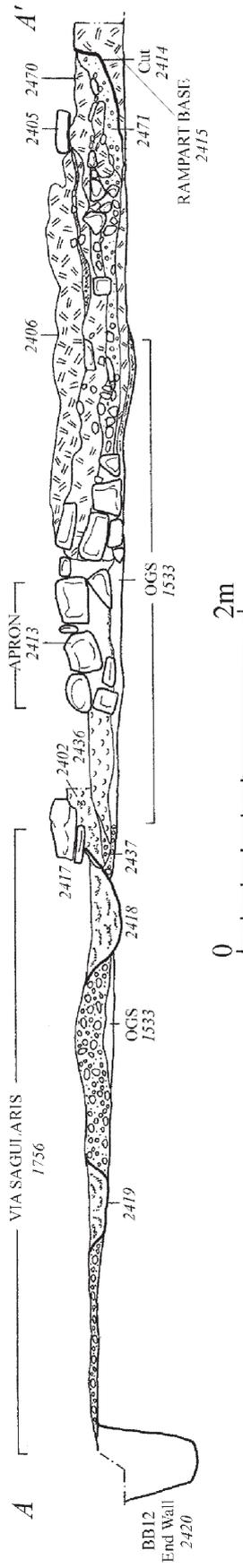


FIG. 7.28 Section through oven 2405, associated stone wall 2417, drains 2418 and 2419, *via sagularis*, 1756 and end wall of Barrack 12, 1720

at the east and west end of the group faced east and north-west respectively, presumably to facilitate ease of access in a relatively confined area. Some 2m to the north of the most westerly example were fragmentary remains of a fifth oven consisting of a circular scatter of large sandstone blocks and burnt clay some 1.8m in external diameter with a possible platform to the south-east.

There were a number of associated ancillary features. To the north of oven 2405 was a short length of roughly constructed dry-stone wall (2417) some 3.6m long and 0.4m wide surviving to a maximum height of 0.35m. Though associated with the ovens, this was clearly a secondary feature (see below 7.5.4). Immediately to the north of this wall were two approximately parallel gullies (2418 and 2419) some 1.25m apart with wide-mouthed U-shaped profiles, each 0.35–0.6m wide and up to 0.22m deep, filled with rake-out material spread from the ovens. The gullies, which cut into the *via sagularis*, were traced for a distance of some 12m from the south-east corner of Barrack 12 until they petered out just after rounding its south-west corner.

The two ovens to the west of the South Gate (2760 and 2761) were situated some 1.9m apart in the lee of the rampart just before it swung inwards (FIG. 7.19). Though less well preserved, they appeared to be marginally smaller in size than those in the south-west corner, with internal diameters of between 1.3 and 1.6m. In neither case did clear evidence of an external platform survive, but slight traces suggested that 2761 faced north-west and 2760 north-east. Again ash and charcoal raked out from the ovens was scattered in the general area filling a shallow gully (2791), *c.* 0.75m wide and only 0.08m deep, which bounded them to the north. It was at least 8m long, though its full extent was not traced.

A second pair of ovens was situated in a similar position on the other side of the South Gate just beyond the bottom of the *ascensus* (FIG. 7.29), though this group was even more poorly preserved. The more westerly oven (2771) survived as scatter of sandstone and patches of burnt clay forming most of the arc of a circle 2.5m in diameter. Some 3m to the east all that remained of the second (2770) was an approximate circle of sandstone and clay fragments *c.* 2m in diameter, though between the two were possible traces of an earlier and slightly larger oven (below 7.5.4). Though oven 2771 may have been partly cut into the back of the rampart, its companion apparently had not been, for a line of three small post-settings (2767) 1.6m apart, demarcated by stone chocking surrounding very shallow depressions, was located on the surface of the *via sagularis* between the rear edge of the rampart and oven 2770.

Amid and partly beneath an extensive scatter of sandstone, burnt clay, ash and charcoal in the south-east corner of the fort it was possible to discern the outline of at least two ovens (FIG. 7.29). The best preserved (2236) had a partially burnt, multi-coloured clay floor 2.3m in diameter surrounded by the remains of a sandstone wall, with a platform, measuring *c.* 1.6m by 0.9m, to the north-west. Contiguous with it to the west was a similar, but much less well-preserved, example (2245) of approximately the same diameter, though in that case without any discernible trace of a platform. The density of the sandstone and cobbles just to the north-west may indicate the presence of a third oven, though the absence of burnt clay in immediate association and the lack of discernible structural form must leave this question open. Indeed, the spread of material, which included many reused quernstone fragments and some brick, is more reminiscent of secondary cobbling found elsewhere in the fort (e.g. above 4.2.4, 6.1.4). A band of red sandstone flags within it (1355), running approximately south-west to north-east, may be the remains of a flattened dry-stone wall similar to that noted in the south-west corner. Some 6m to the north-east of this group of ovens an oval patch of sandstone, clay and light cobbling (2249), 2.4m by 2.7m, which appeared to cut into the rear of the rampart, probably indicates the fragmentary traces of a further example (FIG. 7.22).

Very few ovens were recorded in the *retentura*. There was only one group, consisting of at least two, and probably four, situated opposite the end of Barrack 2 at the northern end of an area of industrial activity running north from the West Gate (see below). Three were situated against the rear of the western rampart and one extended over the *via sagularis* effectively blocking it (FIG. 7.31). The best-preserved example (95) was the most northerly of those which backed onto the rampart. It was circular in plan, measuring *c.* 2.3m in external diameter across the surviving remnants of its burnt sandstone and clay floor, but no external platform or hob

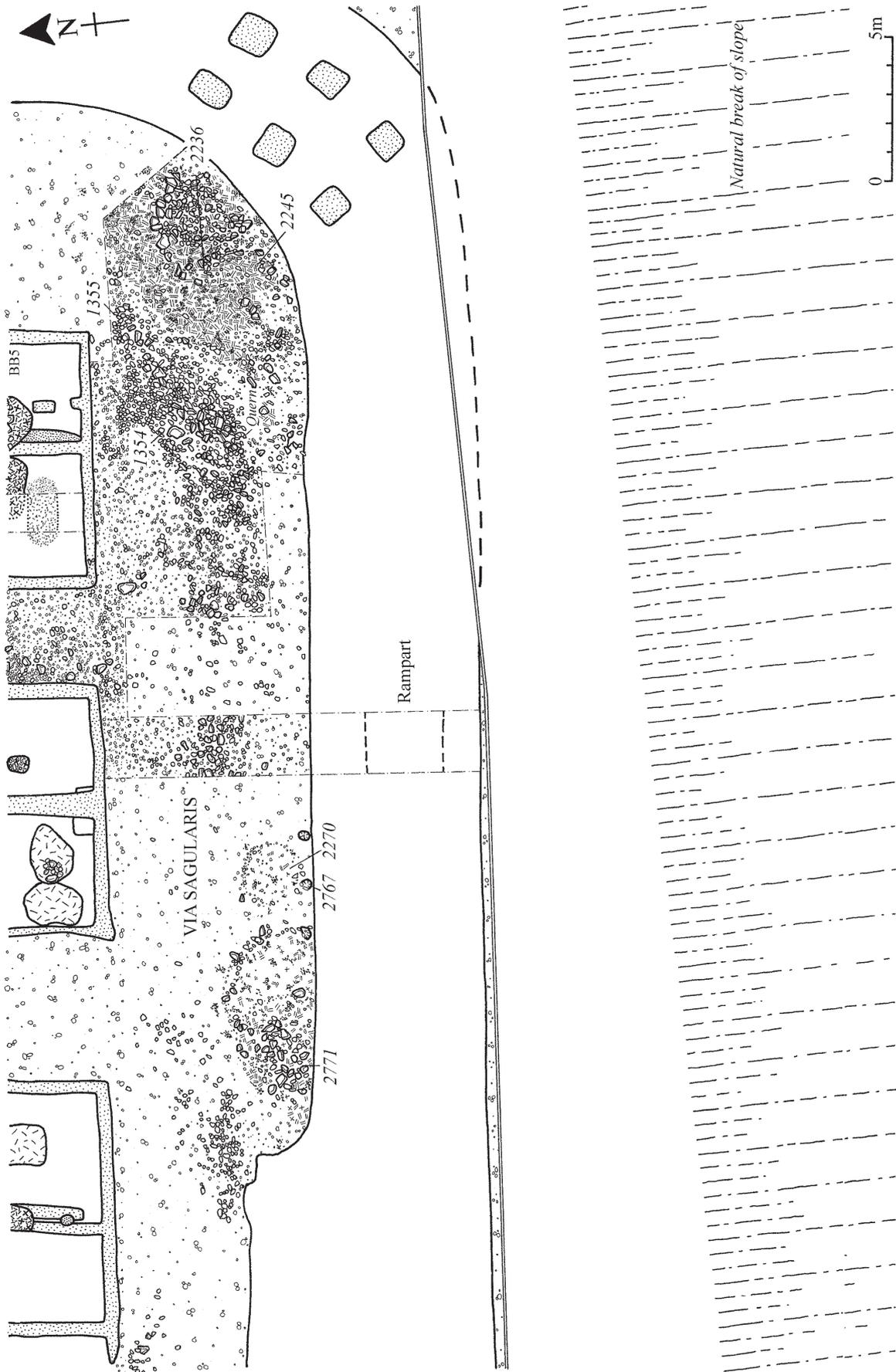


FIG.7.29 Plan of south perimeter of the fort (east)

was visible. The two examples immediately to the south (159 and 163) were very poorly preserved, each consisting of no more than an approximately circular scattering of burnt sandstone, though one was associated with a spread of charcoal and ash. The fourth example (140) consisted of a subcircular patch of sandstone *c.* 2.4m in diameter, with a possible platform to the south-west, overlying the *via sagularis* immediately outside Barrack 2.

The only other example in the *retentura* was a small hearth or oven (959) set into the surface of the road just to the west of the north tower of the East Gate. It consisted of a poorly preserved subcircular cobble base 0.7m in diameter set in clay, of which the outer 0.08m was burnt, and contained quantities of charcoal. Some of the associated finds, including pottery and bone, were also burnt. Since the hearth would have impeded passage around the *via sagularis* (FIG. 7.16) it seems most likely to have been in use when the gate was blocked, though whether this relates to the post-fort use of the enclosure is less clear (below 7.5.4).

Finally, a series of ovens of rather different character and later date were revealed in the *retentura*. One (2432) was located on the *via sagularis* at the back of the west rampart adjacent to the west-south-west interval tower (FIGS 7.20 and 7.32d; PLATE 7.12). It consisted of an oval, or rather kidney-shaped shallow depression, some 1.25m long and up to 0.9m wide. The western end served as a stokehole, with the flue or body of the oven to the east constructed of re-used tiles, bricks and quernstone fragments. The stokehole was filled with wood ash, charcoal, carbonised cereals and burnt bone.

Two pairs of ovens (1539 and 1544/1546) were situated near the centre of the fort, overlying the northern end of Barrack 9 and adjacent to a wide, shallow gully (1545) which ran parallel to the *via principalis* (FIG. 6.4). Of the first pair (1539) only the rather battered floors had survived, one of which was set on a cobble base *c.* 0.8m in diameter. The better preserved pair of ovens (1544/1546) were rectangular or nearly so, measuring 0.5 by 0.35m and 0.35 by 0.24m respectively. Each was set within an amorphous dump of clay, but shared a common stokehole formed by an irregular scoop or hollow (FIG. 7.30; PLATE 7.13). The stokehole



PLATE 7.12 Post-fort oven (2432) overlying *via sagularis* to the south of the West Gate; view north

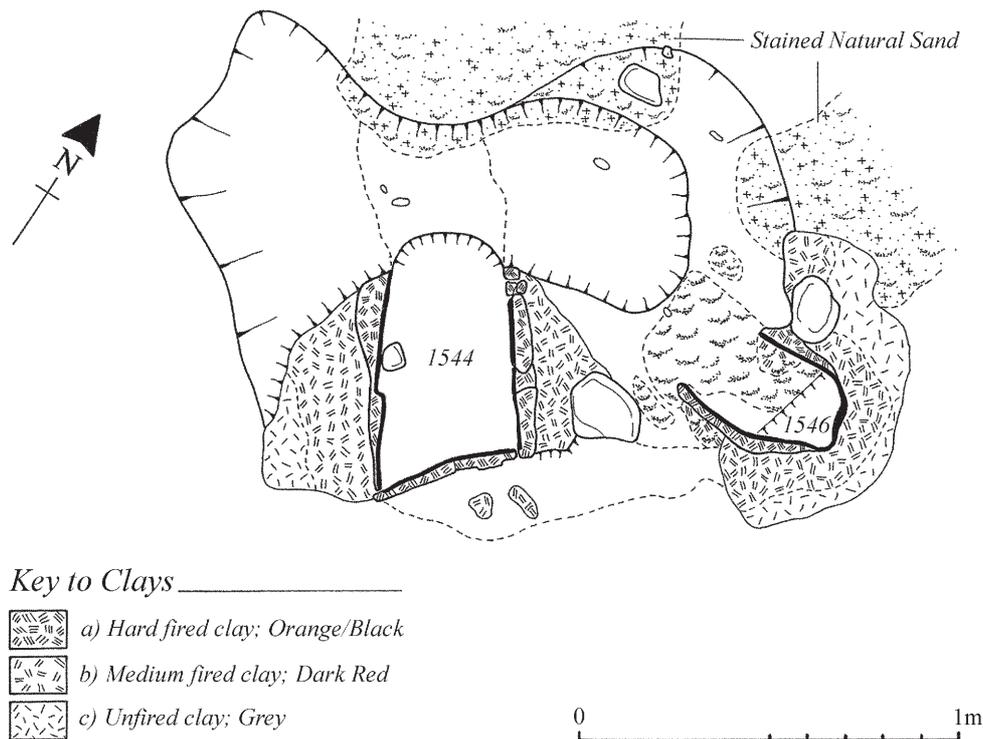


FIG. 7.30 Plan of rectangular post-fort ovens (1544/46) overlying Barrack 9

contained quantities of charcoal. The ovens had been subject to considerable heat, for the inner slabs were fired red, though the effect on the clay dump beyond decreased with distance from the heat source.

Other *intervallum* features

In the gap between the rampart and the *via sagularis* to the north of the West Gate was a 3–4m wide area of industrial activity which extended for some 15m from the back of that gate. This zone was created partly by a narrowing of the road and partly by the sharp in-turn of the rampart to accommodate the recessed gateway. In the lee of the rampart at the southern end of the zone was a metalworking area (FIG. 7.31). This consisted of a spread of material some 2m in diameter (195), its approximate limits to north and south demarcated by upright stone slabs, containing charcoal, clay, both burnt and unburnt, fragments of burnt stone, heavily corroded pieces of iron and numerous pieces of crucible or mould. An oval area of red clay 0.4m by 0.35m and 0.04m thick, sandwiched between thin layers of charcoal across the northern part of this spread may indicate the location of a hearth base. On the south-eastern edge of the spread a shallow oval or horse-shoe shaped depression (1060) 0.45m across and 0.1m deep, edged with purple clay, contained further probable crucible fragments (see 10.11). The undisturbed sand surrounding it was discoloured by the effects of heating, confirming its identification as a hearth or bowl furnace.

Immediately to the north of this working surface were a number of fragmentary structural remains (FIG. 7.31). A narrow L-shaped slot (176) defined two sides of a simple timber building running parallel with the back of the rampart. It was at least 3m long, its southerly limit not precisely determined, and 3m wide, assuming that the rampart formed one side, though the slot ended 1.3m away from it. This was probably the position of a doorway, though the absence of a south side may indicate that the structure was open at that end. A single post-hole some 2.3m further to the south may be associated but was not on the same alignment. This shed was subsequently replaced by a lean-to structure at least 5m long built on dry-stone foundations on

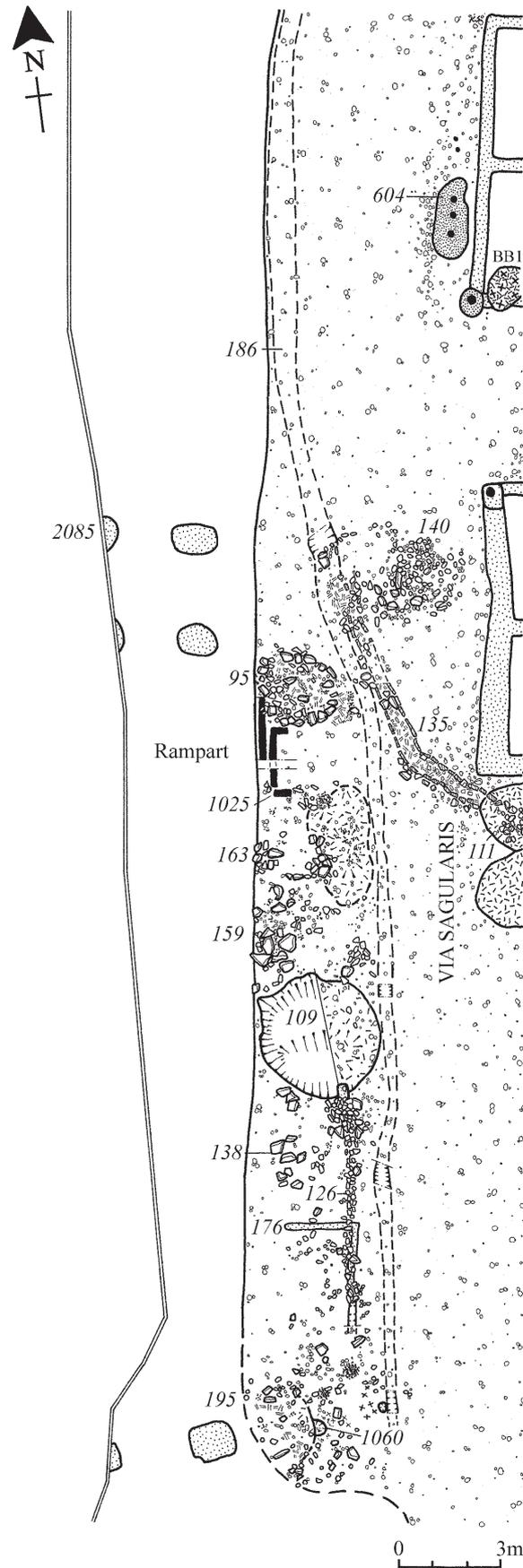


FIG. 7.31 Plan of west perimeter of the fort (north)



PLATE 7.13 Rectangular ovens 1544/46 overlying Barrack 9; view south

the same alignment (126), though lacking any sign of an end wall. A number of sandstone slabs towards the northern end of the building may indicate the provision of a stone floor (138).

A large circular pit (109), 3.5m in diameter and up to 0.85m deep, separated the metalworking area from the cooking ovens to the north. It was almost certainly a rubbish pit, given the quantity of discarded artefacts and burnt material in its fills, particularly the upper fill (118), and presumably served both areas before it went out of use (see below). At least two distinctive phases of deposition were sealed with clean gravel (119) (FIG. 7.32c).

7.5.2 INTERPRETATION AND ANALOGIES

Ovens

The best-preserved ovens are excellent examples of the standard military cooking oven and show exactly the same location, design characteristics and range of size as the well-preserved examples from the contemporary sites at Fendoch (Richmond and McIntyre 1939, 137–8) and Inchtuthil (Pitts and St Joseph 1985, 195–200). The ovens would have been fired by burning fuel, presumably wood, within them until the desired temperature was achieved. The burning contents were then raked out, as the mass of ash and charcoal generally found around them testifies, the bread or other items to be baked placed in the interior, and the door sealed until they were cooked. Raising the ovens up from the contemporary ground surface would have facilitated ease of operation, while the provision of a platform or hob at the front would have ensured that the cooked contents could be withdrawn with less risk of dropping them into the surrounding debris.

The ovens were located at the rear of the rampart to isolate them from the timber buildings within the fort. This served both to minimise the fire risk, the *via sagularis* acting, in effect, as a fire-break, and to keep the main area of the fort as clean as possible. Based upon early excavations at Fendoch (Richmond and McIntyre 1939, 138), supported by later work at

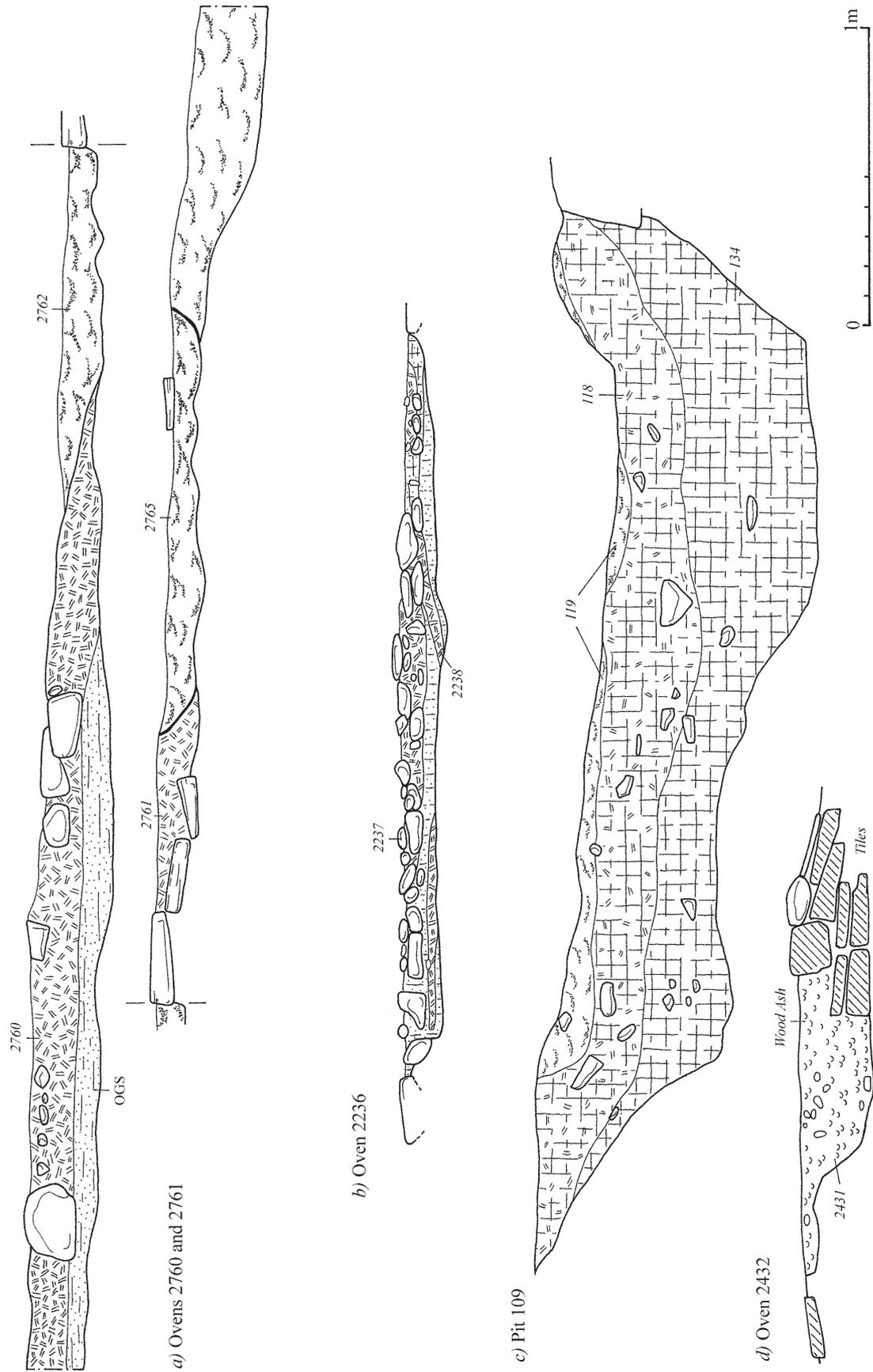


FIG. 7.32 Sections through ovens and related features: a. 2760/2761 by the South Gate; b. 2236 in the south-east corner; c. pit 109 on the north-west side; d. 2432 post-fort oven on the south-west side

Inchtuthil (Pitts and St Joseph 1985, 200), each barrack is usually thought to have had a single communal oven within easy reach. On this basis seven ovens would have been expected in the *praetentura* at Elginhaugh. In fact, at least ten and possibly 13 were uncovered, making no allowance for the possibility that primary cleaning of the *intervallum* area failed to detect other poorly preserved examples. This would suggest that each barrack had access to more than a single oven and probably to two, bearing in mind that the two sites upon which the standard assumption is based were both excavated only very selectively. It should be noted that in the Antonine and later fort at Saalburg some 19 ovens are known from the early excavations (Klee 1995, 32–3), somewhat in excess of the likely number of barracks within the fort. If this hypothesis is accepted, up to eight ovens would be anticipated in the *retentura* at Elginhaugh. The more limited number actually discovered is readily explained by the heavier plough damage suffered there, particularly along the eastern half of the north rampart.

The suggestion which has sometimes been advanced that a particular concentration of ovens may be indicative of an ‘official’ bakery has little to commend it. It seems to be derived from the discovery of a group of three in the west corner of the fort at Pen Llystyn (Hogg 1968, 124), but such groupings or clamps are relatively commonplace and simply reflect the convenience of concentrating such activities when possible. A bank of five ovens has been recorded near the west corner of the contemporary fort at Doune in recent excavations (Keppie 2000, 381–2), and there are at least two other groups of ovens at Elginhaugh.

None of the ovens appeared to have been enclosed within a building or cookhouse, as is sometimes attested (Johnson 1983, 201–2). The structural remains to the north of the West Gate seem more likely to be associated with the industrial activity there than with the ovens. In one case, to the east of the South Gate, a line of three shallow post-holes (2767) behind one oven (2270) did indicate the presence of an associated timber structure, though there was no evidence that it was any more than a revetment for the rear edge of the rampart. A similar provision, though based on a post-trench rather than post-holes, was noted between the ovens and rampart at Pen Llystyn (Hogg 1968, 123, fig. 22). The dry-stone wall (2417) to the north of oven 2405 was not a substantial structural feature and was presumably intended to demarcate the cooking area, contain the material raked out from the oven and prevent it from spreading over the *via sagularis*. Certainly the deposits sealing this area were characterised by extensive spreads of charcoal and ashes (below 11.2) suggesting that they were composed largely of such rake-out material. Possible traces of a similar dry-stone wall (1355) were noted to the north of the ovens in the south-east corner, though it had been completely flattened to form a secondary road metalling.

As noted above, two approximately parallel gullies (2418 and 2419), filled with rake-out material, were located immediately to the north of the dry-stone wall (2417) cutting across the *via sagularis* by the ovens in the south-west corner (FIG. 7.19). Though superficially resembling cart-tracks, the depths of the gullies, the variable distance between them, and the sharpness of the turn in their course all militate against such an interpretation and suggest that they were intended to drain the area. This too seems the most likely interpretation for the rather wider, but much shallower gully (2791) filled with ash and charcoal to the north of ovens 2761 and 2760 by the South Gate.

Though clearly different from standard cooking ovens found within forts, the post-fort ovens, particularly 2432 and 1544/1546, could be interpreted as simpler, less permanent versions of the same principle. They have rather more in common with the ovens sometimes found within temporary camps, which tend to be at least partially sunk into the ground. Broadly similar examples are known from Kintore, in Grampian, Carronbridge in Dumfriesshire, Monktonhall, Midlothian and only 0.5km away at Melville Nurseries (Shepherd 1986, 207–8; Johnston 1994, 258–9; Hanson 2002, 54–7; Raisen and Rees 1995, 39–40, 44), the first two of which contained carbonised grain. Since ovens 1544 and 1546 seem to relate to the temporary occupation of the area demarcated by the gully (1545) in the south-west corner of the fort, they presumably functioned as cooking ovens for whatever detachment subsequently utilised the fort enclosure, for a few wheat grains and a fragment of calcined cattle bone were recovered from oven 2432. The presence within its fill of large quantities of carbonised barley and weed species

(below 11.2.5) indicates the presence of locally grown animal feed grain, though whether the oven was being used to dry the cereals is unclear.

Other *intervallum* features

Identification of the *intervallum* area to the north of the West Gate as one in which relatively small-scale metalworking was taking place is clear-cut. The presence of scattered bits of copper alloy, both artefacts and waste (below 7.5.5), and numerous crucible fragments containing traces of copper alloy (below 10.11), combined with the structural evidence of an open hearth area (195) and shallow bowl-furnace (1060), indicates that the small-scale manufacture or, more likely, repair of copper-alloy artefacts was taking place. What is more difficult to explain is the location of this activity. Given the existence of a structure identified as a *fabrica* on the opposite side of the fort, it seems strange to find metalworking taking place just behind the West Gate only a few metres from the *praetorium*. Nor was this the most unexpected location, for metalworking is also attested in the ambulatory at the front of the *principia* (above 4.1). It is becoming increasingly apparent that such small-scale industrial working is not infrequently found in various locations around a fort, most frequently in the *intervallum* area, though not necessarily inside any structure. Evidence of ironworking was identified in a similar location beside the north-east gate at Pen Llystyn (Hogg 1968, 122) and in the western *retentura* in the legionary fortress at Inchtuthil, while slag from pits elsewhere in the fortress, particularly along the *via decumana*, suggests that metalworking outside the *fabrica* was not just confined to this one location (Pitts and St Joseph 1985, 199, 300–1). Similarly, in the Antonine period at Strageath a Y-shaped furnace, perhaps related to the working of copper alloy, was situated at the rear of the rampart and three successive ironsmithing hearths were found in a building in the south-west corner identified as a barrack (Frere and Wilkes 1989, 80, 112).

There are few parallels for the types of hearth represented since the limited examples excavated often provide little structural detail and those that do seem to show great variety. However, the oval clay hearth base is reminiscent of an example from within the *fabrica* at Red House, Corbridge, which was associated with the working of copper alloy (Hanson *et al.* 1979, 30, fig. 5).

It not unusual to find structures located in the *intervallum* area in second-century and later auxiliary forts, though they are extremely rare in the first century (for a brief discussion see above 5.3.2). Their identification as either bath-buildings or cookhouses tends to be confirmed by the distinctive structural characteristics of the former or by a direct association with a number of ovens, as for example at Caerhun (Baillie Reynolds 1938, 36). However, the timber example at Hod Hill (Richmond 1968, 88), though interpreted as a cookhouse, showed no traces of cooking ovens within it, but was associated with intensive burning perhaps indicative of an industrial use. That the small lean-to timber shed at Elginhaugh, and probably its stone successor, were in some way linked to the manufacture or repair of copper-alloy artefacts is suggested by the close spatial link with the hearth area. The replacement of a timber structure by one at least founded on stone presumably relates, at least in part, to the danger presented by activities involving fire, though there was no indication that its predecessor had been burnt down.

7.5.3. CONSTRUCTION AND RECONSTRUCTION

Ovens

A section through one well-preserved example (2405) in the south-west corner showed that it was founded upon a cobble base some 0.12m thick, the floor being made up of purple-grey clay partially oxidised in places to a pink-red (FIG. 7.28; PLATE 7.14). The walls were 0.4–0.5m thick, constructed from rough sandstone slabs bonded with orange-yellow clay, giving an overall external diameter for the ovens of *c.* 2.5–3m. The same general structural form is indicated in the best-preserved example from the *retentura* (95), though little survived of the



PLATE 7.14 Section through oven 2405/6 showing relining; view south-east

clay floor. This structural detail is more reminiscent of the broadly contemporary examples from Pen Llystyn (Hogg 1968, 123, fig. 22) than the more immediately local parallels at Fendoch and Inchtuthil, which had floors made up of neatly laid sandstone slabs (Richmond and McIntyre 1939, 137–8; Pitts and St Joseph 1985, 197–9). Some other examples, such as those immediately to the west of the South Gate (e.g. 2760, FIG. 7.19), though similarly constructed, lacked the cobble basal layer and were laid either directly upon the *via sagularis* or onto the old ground surface (FIG. 7.32a).

The nature of the superstructure is uncertain. The walls, at most two courses in height, did not survive above the level of the oven floor. These may have continued upwards, corbelling inwards to form a dome, as postulated at Fendoch and Inchtuthil and implied by the curvature of the wall in the example outside the temporary camp at Carronbridge (Johnston 1994, 258–60). Alternatively, a dome could have been created from wattle and clay, as suggested on the basis of the quantities of the latter noted at Pen Llystyn. Given the relative abundance of flat sandstone slabs in the demolition layers sealing the ovens in the south-west corner, the former seems the more likely, though the quantities of unburnt clay recovered from around ovens 2760 and 2761 (FIG. 7.32a) would be more indicative of a clay superstructure.

The post-fort oven (2432, FIG. 7.20) on the south-west side of the fort was of rather different character to the standard military cooking ovens described above. It was set at one end of a shallow subcircular pit measuring 1.25m by 0.9m and 0.25m deep. Re-used bricks, including the only voussoir bricks recovered from the fort, which may have been derived from the bathhouse, formed the lining of a flue or chamber 0.7–0.8m square externally, the remainder of the pit acting as a stoke-hole (PLATE 7.12). The nature of its superstructure is unknown, though it is likely to have been flat-topped.

The well-preserved pair of post-fort ovens overlying Barrack 9 (1544 and 1546, FIG. 6.4) had almost rectangular flues formed on three sides by slabs of clay *c.* 0.06m wide, set within an irregular dump of clay up to 0.3m deep (FIG. 7.30; PLATE 7.13). The fourth side of each oven was open, facing west or north-west onto the stokehole, a shallow irregular hollow. Large

quantities of charcoal and further pieces of fired clay slabs were removed from their interiors, the latter presumably derived from the collapsed roof of the ovens which are likely to have been flat.

Other *intervallum* features

The structure of the one certain furnace (1060) was very simple, consisting of a shallow, partly clay-lined depression only 0.1m deep (FIG. 7.31). There is no indication of any superstructure, nor was any required. Sufficient heat to melt small amounts of copper-based alloy in a thick clay crucible could be readily obtained by augmenting the oxygen supply to charcoal placed in such a shallow hollow.

The small timber shed was a very slight structure. It was based upon a shallow U-shaped construction trench, only 0.15m in both width and depth. The absence of any supports for its western side suggests that it was a lean-to structure, utilising the rear of the rampart as one wall. Its replacement, though similarly only of lean-to construction, was more solidly based. The wall foundation trench was 0.8m wide, 0.2m deep and contained two courses of sandstone slabs set in a sand matrix. This is broadly analogous with the outer wall of the *fabrica* (above 5.3.3), though lacking its mortar bonding. How far up the superstructure this dry-stone construction continued is uncertain.

7.5.4 STRATIGRAPHY AND PHASING

Ovens

Construction of the ovens clearly came at the end of the building sequence within the fort. Many were partially cut back into the rear of the rampart, as for example in the bank of ovens in the south-west corner (FIG. 7.27). In two cases (95 and 163) at the western end of Barrack 2, ovens overlay rampart strapping (1025, FIG. 7.31) which had become carbonised, presumably as a result. Most overlay the *via sagularis*, at least at their front.

The associated features were also clearly secondary. The short stretch of walling (2417) at the rear of oven 2405 overlay the rake-out material (2402), which in turn filled gullies 2418 and 2419 and overlay the ash layer (2436) that probably relates to the first phase of oven use. The two parallel drainage gullies (2418 and 2419) at the end of Barrack 12 were themselves cut into the *via sagularis* and the inner one presumably overlay the latrine overflow pit (2429), though the collapse of demolition material into the upper fill precluded certainty on the matter (see above 6.4.4). Similarly the gully (2791) which bounded the two ovens to the west of the South Gate was cut into the *via sagularis*, as were the post-holes at the rear of the rampart on the eastern side of that gate.

In several cases there were indications of possible rebuilding. An arc of sandstone fragments between the two ovens (2770 and 2771) to the east of the South Gate may indicate the outline of a third example (FIG. 7.29). Extension of the arc to form a circle would give an oven some 4m in external diameter, which would have overlapped with 2771, though the fragmentary survival of both made it difficult to establish with certainty which was the earlier. The section through one of the best-preserved ovens (2405) in the south-west corner suggested that it had been resurfaced. The original clay lining (2470), baked red and partially covered with a layer of ash, was sealed beneath a subsequent cobble and purple-grey clay floor only partly oxidised to a pink/red colour (2406) (FIG. 7.28). It is possible, however, that the later 'floor' represented the remains of the collapsed superstructure. The other well-preserved examples were not examined to test whether they too exhibited the same features and most other examples were too poorly preserved to allow the recovery of such detail. However, the presence of discontinuous layers of clay (2238) sealed by cobbles (2237) in oven 2236 (FIGS 7.29 and 7.32b) may indicate repair or rebuilding. In addition, oven 2761 seems to have undergone some disturbance, for a shallow pit filled with baked clay, charcoal and quantities of carbonised wheat and barley (2765) was cut through its clay floor (FIG. 7.32a).

Finally, three sets of ovens, all of very different character from those that relate to the occupation of the fort, were clearly in use after the fort buildings were demolished. A single example (2432) was cut into the *via sagularis* in the south-west corner and overlay demolition material, its post-fort date further supported by the re-use of voussoir bricks from the demolished bathhouse (FIG. 7.32d). Similarly, two poorly preserved (1539) examples overlay demolition material at the north end of Barrack 9. Finally, only *c.* 5m away two well-preserved ovens (1544 and 1546) overlay the construction trench of the east wall of Barrack 9 (FIG. 6.4).

Other *intervallum* features

Pit 109 was centrally located in the *intervallum* area north of the West Gate and served to separate the bank of ovens from the metalworking area to the south. When it had been filled with rubbish, it was sealed by a layer of clean gravel (119). The timber shed (176) to the south was overlain by foundations (126) of the dry-stone building which was extended further northwards across the top of pit 109, indicating that the latter had gone out of use during the lifetime of the fort.

7.5.5 ASSOCIATED FINDS

Ovens

- 959 and 960, oven/hearth on *intervallum* by East Gate: 5 sherds of coarse pottery including type 138, 1 sherd of mortarium, 5 sherds of amphora, fragments of burnt animal bone, charcoal
- 2431, fill of post-demolition phase oven 2432: quantities of carbonised barley with some wheat and associated and weed seeds, 1 sherd of coarse pottery, much brick, 15 lava quern fragments, numerous fragments of bone, including cattle, pig and sheep/goat, mainly burnt
- 2436, ash layer, probable rake-out material from oven 2405 in south-west corner: alder and hazel charcoal
- 2761, oven to the west of the South Gate: a few fragments of indeterminate carbonised cereal grains
- 2765, fill of shallow pit in interior of oven 2761 to the west of the South Gate: quantities of carbonised wheat and barley, fir, alder and hazel charcoal (see below 11.2)

Associated features

- 94, rake-out from oven 95, to the west of Barrack 2: 1 sherd of coarse pottery, 1 piece of unidentified iron, fragments of burnt animal bone, daub
- 160, soil surrounding oven 159, to north of West Gate: double spiked iron loop (no. 155), agate intaglio, several sherds of coarse pottery, including type 58, 1 sherd of mortarium, several sherds of amphora, 1 piece of animal bone, 6 nails, daub
- 1354 and 1355, secondary metallurgy in the south-east corner: 50 sherds of coarse pottery, over 45 sherds of amphora, 3 sherds of plain samian, 1 fragment of glass cup, over 65 fragments of lava quern, including nos 10, 17 and 19, some brick, 3 nails
- 1400, general rake-out from ovens in the south-east corner: 2 sherds of coarse pottery, fragments of animal bone
- 2402, demolition spread admixed with oven rake-out in south-west corner: copper-alloy bow brooch (no. 5), copper-alloy cylinder (no. 82), 1 piece of copper-alloy waste, 1 piece of unidentifiable lead, 1 unidentified iron object, over 50 sherds of coarse pottery, including types 80, 82 and 125, 5 sherds of amphora, 1 sherd of decorated samian (D11), 1 melon bead, 4 fragments of glass (cup, bottle), 3 nails, numerous pieces of animal bone and teeth (cattle, sheep/goat, pig, bird), many burnt, much charcoal, a few indeterminate cereal grains
- 2762, disturbed rake-out from ovens to the west of the South Gate: copper-alloy rod (no. 77), fragment of a lead plate (no. 227), over 40 sherds of coarse pottery, including types 74, 124, 194, over 10 sherds of mortarium, 12 sherds of amphora, 3 sherds of plain samian, rim fragment of pillar-moulded glass bowl, 4 fragments of bottle glass, 1 fragment of animal bone and several cattle teeth, charcoal, a few carbonised cereal remains
- 2792, fill of gully 2791 north of ovens 2760 and 2761: much alder, oak, birch and hazel charcoal, a few carbonised cereal remains

Other *intervallum* features

- 118, middle fill of pit 109 at the rear of the west rampart to the north of the West Gate: two unidentifiable fragments of copper alloy, 1 melon bead, some 40 sherds of coarse pottery, including types 63, 124, 138 and 150, 3 sherds of samian, including decorated (D12), 2 sherds of amphora, 1 piece of bottle glass, 10 nails, fragments of cattle and sheep/goat teeth, charcoal, daub
- 134, primary fill of pit 109: 1 sherd of coarse pottery, 4 nails
- 138, floor of lean-to structure 126: 3 pieces of copper-alloy waste, 2 sherds of coarse pottery, 1 sherd of plain samian, 1 fragment of cattle tooth, 1 piece of shell, 1 nail, iron concretion, cinder
- 195, metalworking area at the rear of the West Gate: crucible fragments with copper-based residue, 4 sherds of coarse pottery, 2 nails, much charcoal of alder, hazel and birch, a few carbonised cereal remains and weed seeds (below 11.2)
- 1054 and 1056, gridded spits within metalworking area (195): small copper-alloy clip (no. 79), rectangular copper-alloy bar (no. 98), two unidentifiable copper-alloy fragments, copper-alloy waste, 2 unidentified iron objects, 19 crucible fragments, several with copper-based residues, 1 piece of industrial ceramic, 1 piece of cinder, 3 sherds of coarse pottery type 140, numerous fragments of animal bone, mainly burnt, 9 nails, including hobnails, much charcoal, burnt lithic
- 1058, surface of *via sagularis* by *praetorium*: one piece of copper-rich vitreous material, 3 sherds of coarse pottery, over 25 sherds of amphora, 1 piece flint
- 1060, copper alloy working hearth: 12 pieces of probable crucible, copper-alloy waste, 1 nail, charcoal
- Copper-alloy waste and crucible fragments were also recovered from secondary and demolition contexts nearby e.g. the refacing of the rampart at the West Gate (1136) (below 7.2.5) and pit 75, behind the *praetorium* (above 4.2.5).

CHAPTER 8

THE ANNEXE

8.1 ENCLOSURE AND SUBDIVISION

8.1.1 DESCRIPTION

Phase 1

The annexe was situated to the west of the fort, defined by a single ditch on the north and south sides, and seems to have been laid out as a unitary system, though perhaps later subdivided (below 8.1.4). The west side lay outside the field available for examination so that the total area enclosed is uncertain, but was at least 2.5ha (6 acres) on the basis of the average dimensions within the ditches. The line of a double ditch on approximately the right alignment has been recorded on aerial photographs some 400m to the west of the fort (FIG. 1.1), but does not have the same characteristics as the ditches of the annexe and is most likely to define a trackway of much later date (Raisen and Rees 1995, 41). The defences of the annexe were examined at four points: two on the north side and two on the south during a later watching brief (FIG. 1.2).

The southern ditch (5) appears to follow a logical course along the edge of the flat plateau on which the fort stands (FIGS 8.1 and 7.5), presumably joining the fort ditches at their south-west corner. The line of the north ditch (803/805, 1120) is less easily determined or explained. It did

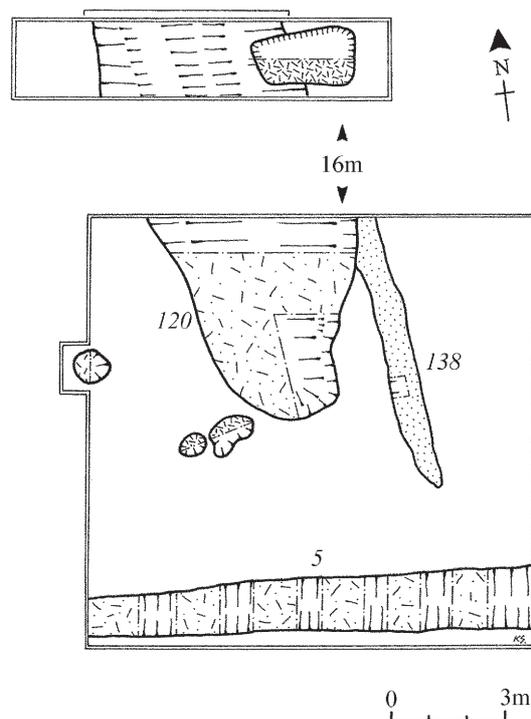


FIG. 8.1 Plan of Trenches 10 and 11

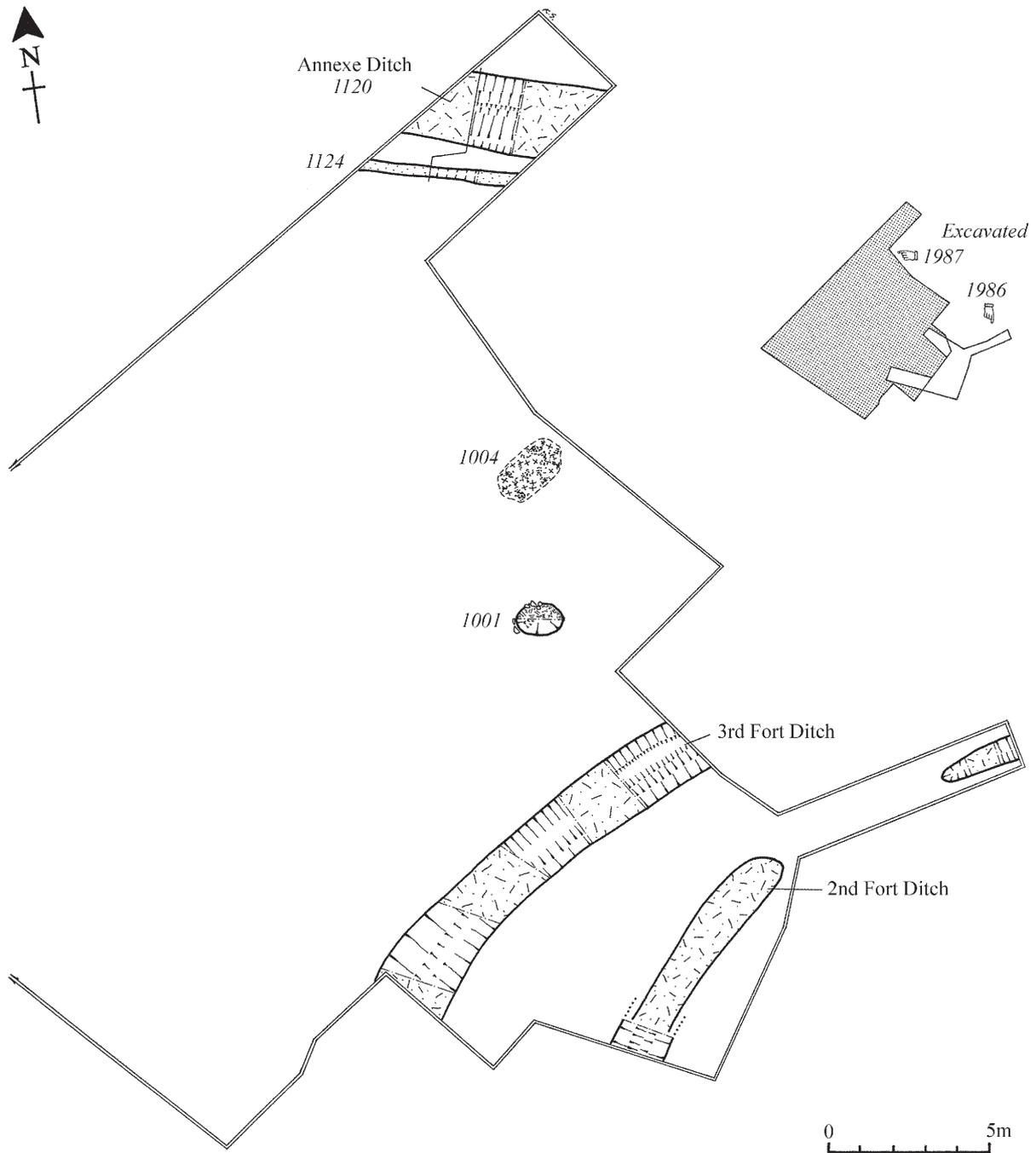


FIG. 8.2 Plan of Trench 6

not join the fort ditches at the north-west corner as anticipated (FIG. 8.2). This may be explained by the presence here of extensive water-borne silt deposits, indicating that it had been an area of very poor drainage. Unfortunately there was no time available to follow the line, once it had been established, by extending the original trench to the north to the point of intersection with the fort ditches. In addition the northern ditch followed a somewhat sinuous course further to the west at the point where the annexe seems to have been subdivided (FIG. 8.3; PLATE 8.1), before continuing in a straight line due west and beyond the area available for examination.

On the south side, examined in a subsequent watching brief in 1989, the annexe ditch was relatively narrow (1.4–1.6m) and shallow (0.7–0.9m) with a V-shaped profile. On the north side the dimensions were more variable, though generally larger. In the limited section

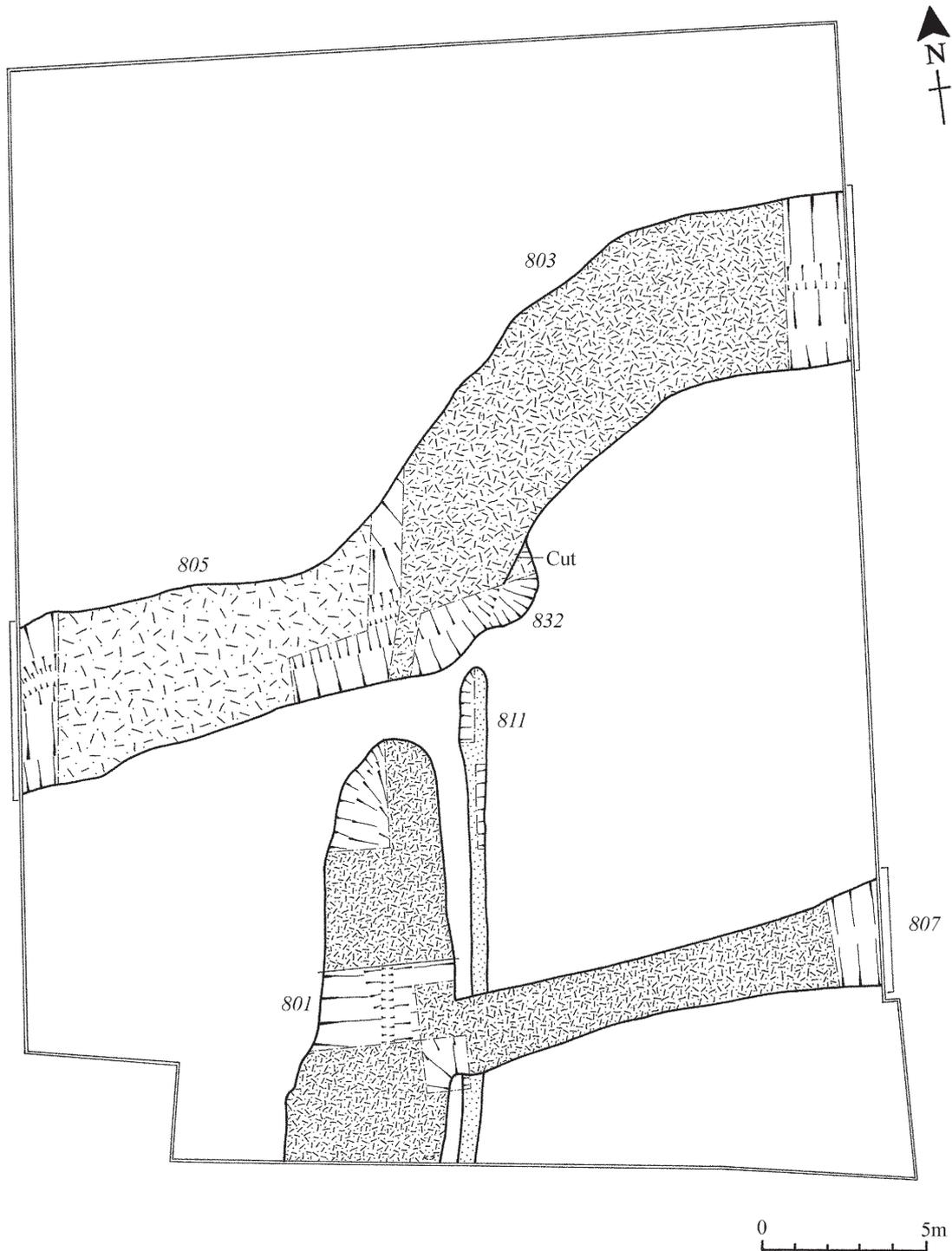


FIG. 8.3 Plan of Trench 5

investigated in Trench 6, the dimensions were similar to those on the south side: 2.1–2.3m wide and 0.6m deep (FIG. 8.4a). But to the west in Trench 5 the character of the ditch changed. Here it varied in width from 4.5m to 5.2m, with a gently sloping outer face and a more sharply defined inner one, and in depth from 1.15m to 1.4m (FIG. 8.4b and c). It is possible that these increased dimensions derive from a recutting of the ditch (below 8.1.4). It should be stressed, however, that the dimensions are to some extent approximate, since on a gently sloping side it is not easy to determine precisely where the cutting for the ditch began. Moreover, there were indications of some collapse of the sides of the ditch in this area.



PLATE 8.1 Ditches 801, 803, 805 and 807, and gully 811, at north-west corner of Trench 5; view north

No traces survived of a rampart inside the annexe ditch. A shallow, almost flat-bottomed gully (1124), 0.3–0.5m wide and 0.2m deep, running approximately parallel with and some 0.6–1m to the rear of the ditch, was detected on the north side of the annexe in Trench 6 (FIGS 8.2 and 8.4a). This may represent support for some form of revetment or fence line. However, no traces of post-impressions were detected in the 1.5m length excavated, and the feature appears rather too shallow to have supported free-standing timbers.

A similar shallow slot or gully (138/811) was noted running just inside and parallel to the later dividing ditch at all points where any reasonable length was exposed (FIGS 8.1, 8.3 and 8.10; PLATE 8.1). This was 0.6–1m wide and 0.25–0.4m deep (FIG. 8.5c). Its pronounced V-shaped profile and fill of demolition material sealed by turf suggests that it had not contained uprights, but had remained open. Though only a slight feature, this gully seems to be all that remains of a primary subdivision of the annexe some 55m from the outer ditch of the fort, for it clearly precedes the large dividing ditch (801/120) (below 8.1.3), unless it simply represents a marking-out trench for that ditch. A single shallow post-hole (140) immediately to the west, seen in section in Trench 1 (FIG. 8.5c), may be associated, or it may form part of a building of Phase 1b (below 8.2.1).

Phase 2

Towards the end of its working life, that is after Phase 1c of the developments in the interior and probably after the demolition of the buildings within the fort (below 8.1.4), the annexe was subdivided more definitively by a ditch (801/120) running in a straight line parallel to the western defences of the fort, situated immediately to the west of the earlier dividing gully (138/811, FIGS 8.1, 8.3, 8.6 and 12.2; PLATE 8.1). It stopped short of the outer annexe ditch to both north and south, and also butt ended on either side of the main road from the west gate of the fort, turning inwards slightly to frame an entrance. A second ditch (807) abutted it almost at right angles some 8m from its northern end in Trench 5 (FIG. 8.3), running broadly parallel with, and some 19m inside, the primary northern ditch of the annexe. Unfortunately, this ditch was not detected in Trench 6, so that its limits remain undefined. However, assuming it to have been continuous as far as the outer ditches of the fort, the combined effect of these two ditches was to demarcate an area of slightly more than 0.8ha (2 acres) within the annexe immediately adjacent to the fort. At the same time the annexe was further subdivided by two ditches (247

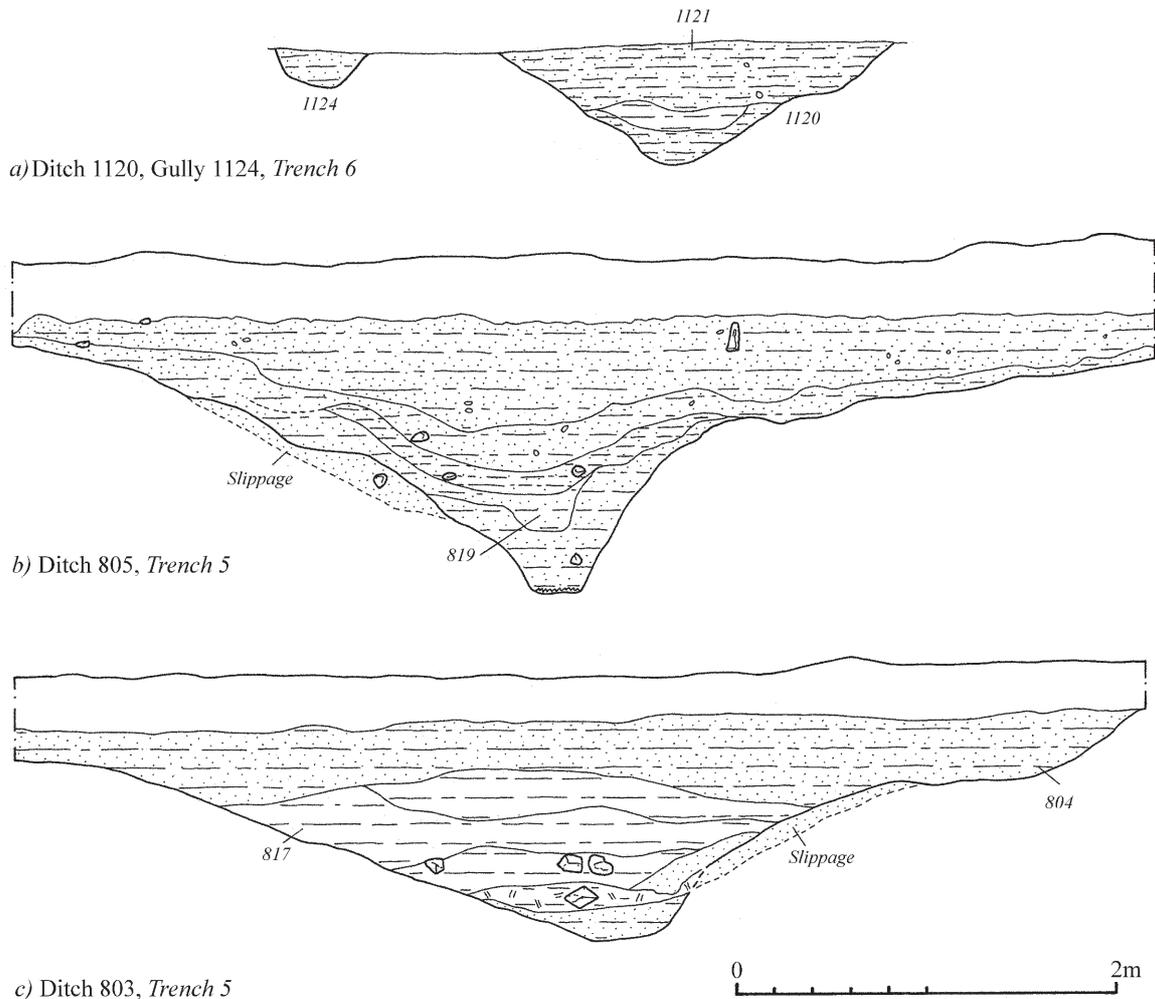


FIG. 8.4 Annexe enclosure, ditch and gully sections: a. north side, ditch 1120 and gully 1124 (Trench 6); b. and c. north side, ditch 805/803 (Trench 5)

and 420), one on either side of, and running at an acute angle to, the road (FIGS 8.6 and 8.11). These formed a funnel between the outer fort ditch and the entrance to the inner part of the annexe (FIG. 12.2).

The dividing ditch (801/120) was sectioned in six places: at each of the four butt ends and at points a few metres from the extreme north and south ends (PLATE 8.2). It was of consistent character being some 4–4.5m wide and 0.8–1.1m deep (FIG. 8.5a–c) with a V-shaped profile, though oddly stepped at its southern end. The inturned ends at the entrance were created simply by widening the ditch to some 5.7m over the last 2.5m of its length (e.g. FIGS 8.5e and 8.6).

Although functioning contemporaneously, the inner annexe ditch on the north side (807), which abutted the northern end of the dividing ditch (801) in Trench 5 (FIG. 8.3), was of a rather different character. It was 2–3m wide with a broad U-shaped profile and only 0.65m in depth (FIG. 8.5d). The profiles of the funnel ditches (247 and 420) were different again. They were consistently V-shaped, but with a more gently sloping side facing the road (FIG. 8.7a and b), and varying in width from 2.7m to 3.2m and in depth from 0.8m to 1.1m, but with a tendency to get both shallower and narrower (2–2.2m) at each end.

The main ditch dividing the annexe (801/120) presumably had an associated bank or rampart, though only in Trench 1 by the entrance did any traces survive (FIG. 8.6). Here the rampart was of turf, some 3m wide. It ran approximately 2m behind the dividing ditch on its

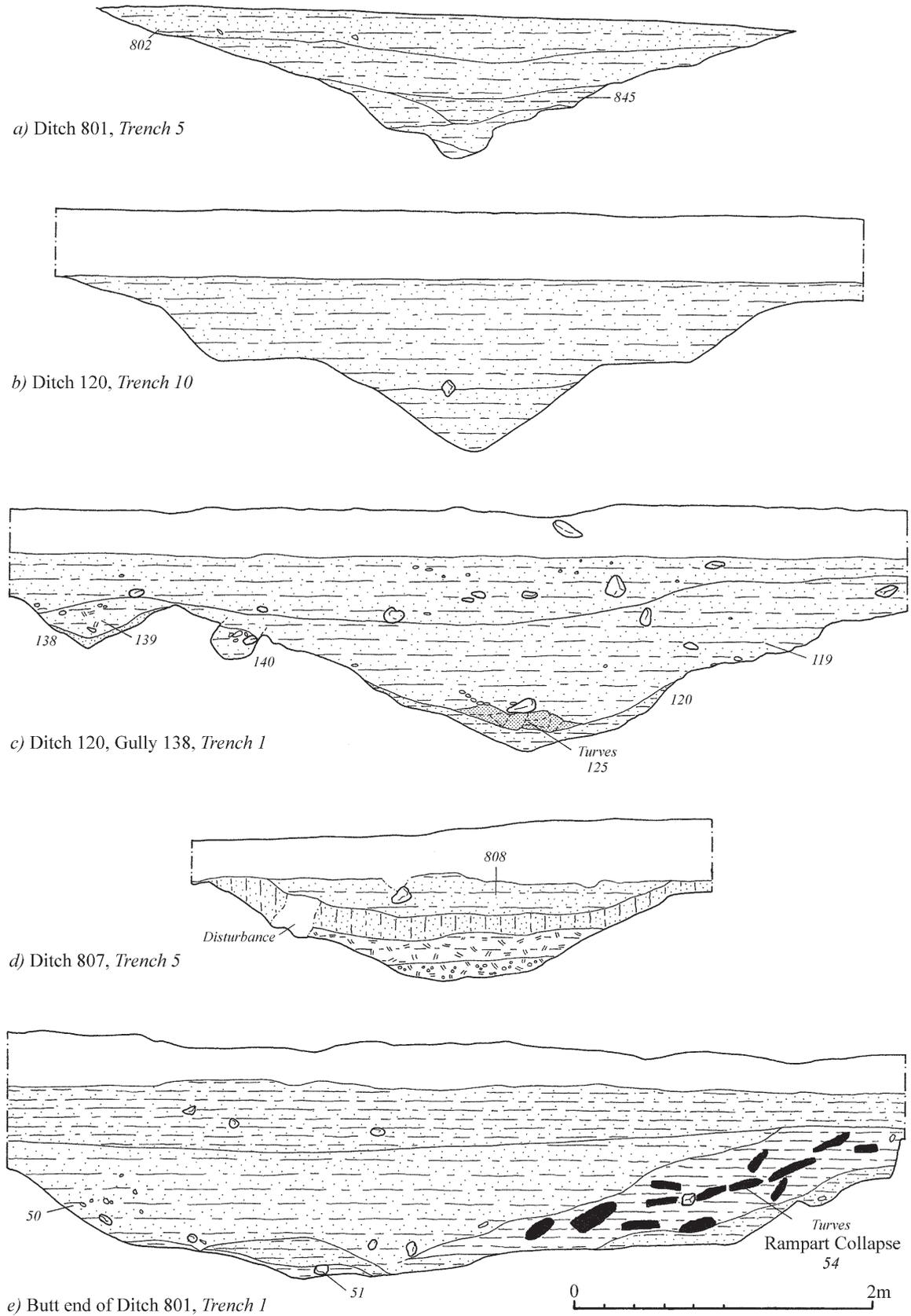


FIG. 8.5 Annexe subdivision, ditch and gully sections: a. dividing ditch (801), northern end; b. dividing ditch (120), southern end; c. dividing ditch (120), south side of entrance and earlier gully (138); d. inner annexe ditch 807; e. collapsed rampart and butt end of dividing ditch (801)

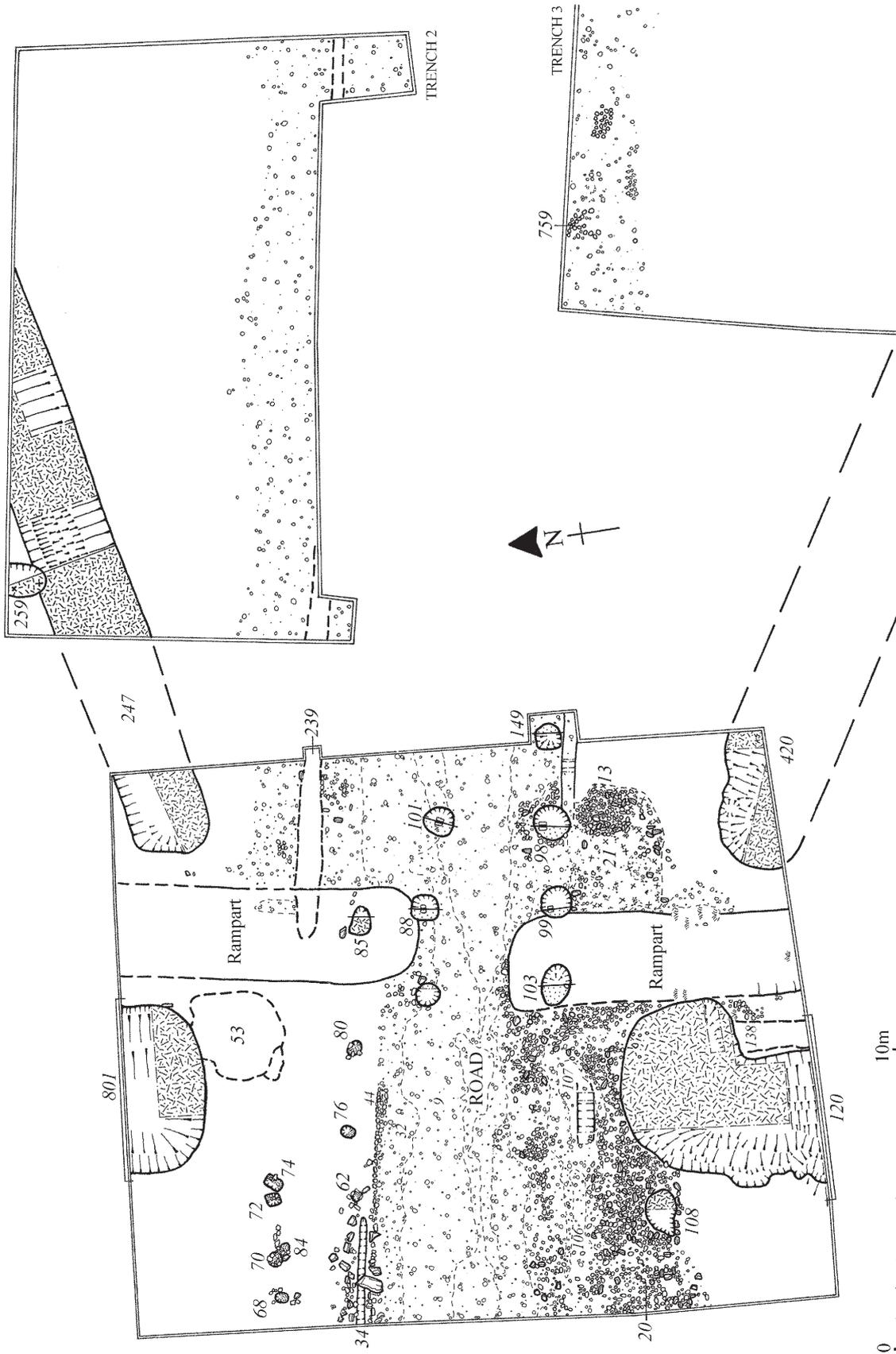


FIG. 8.6 Plan of Trenches 1 and 2, Phase 2

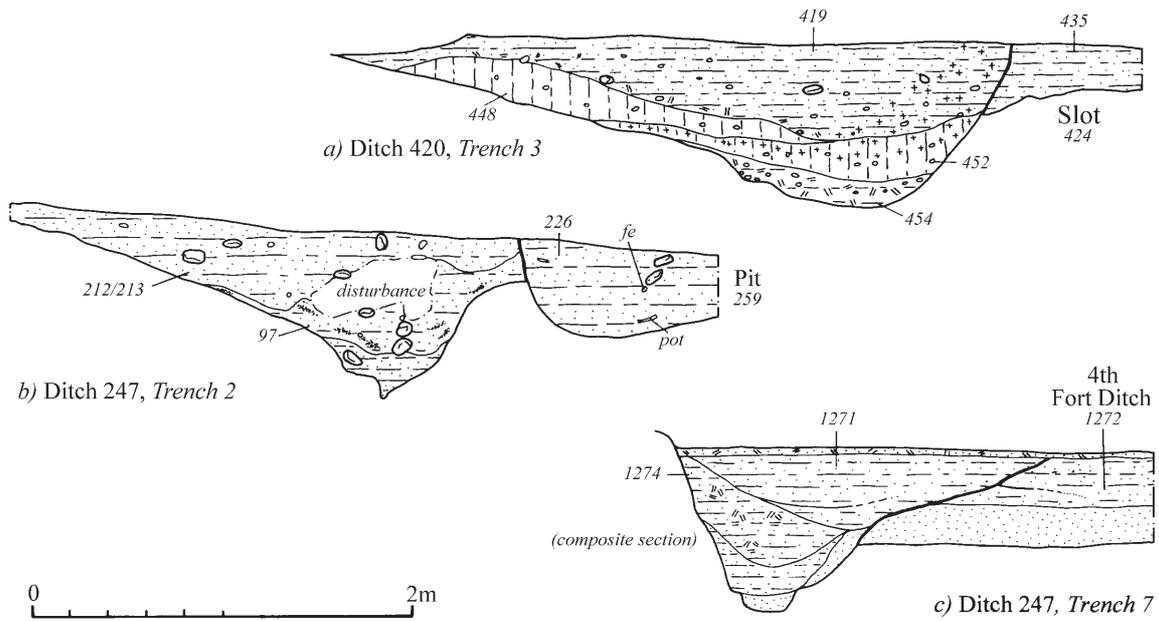


FIG. 8.7 Sections through the funnel ditches: a. south side of road (420); b. north side of the road (247) cut by later pit (259); c. relationship of northern funnel ditch (247) with outer fort ditch 1272 (composite section)



PLATE 8.2 Butt end of dividing ditch 801 cutting flagged surface 49 which overlies pit 56, with the pit/oven complex, 65, 53 and 48 to the left, Trench 1; view south

eastern side, though the inturned ends of the ditch brought the rampart to its lip. Indeed, much of the superstructure had later collapsed, or more likely been pushed (below 8.1.4), into the ends of the dividing ditch (FIG. 8.5e) and also into the ends of the funnel ditches (247/420) which encroached to within just over 1m of the back of the rampart.

The rampart abutted the front third of a simple single-portal gateway constructed on probably eight post-holes (FIG. 8.6; PLATE 8.3). The width of the portal varied between 3.1m and 3.8m, as measured between the inside edges of surviving post-impressions, and the overall external length of the gate was 8.3m. Seven of the eight posts were revealed and sectioned, but there was no time at the end of the excavation to investigate the presumed eighth post at the rear of the gate on the north side, which lay outside the limits of the trench. Post-impressions were recorded in four of the post-holes (below 8.1.3), though only in section.

Immediately outside this gate, along the north side of the road, a construction slot (34) and series of post-holes (62, 76 and 80) indicated the presence of a fence or similar barrier preventing immediate access to this side of the outer annexe (PLATE 8.4). Five further post-holes (68, 70, 72, 74 and 84), including two sets of pairs, ran in a parallel line some 3m north of the edge of the road and may also go with this phase, or possibly with the buildings of Phase 1b (below 8.2). A short length of construction trench (107) running for some 2m parallel



PLATE 8.3 Annexe gateway post-holes cutting through road surface, Trench 1; view west



PLATE 8.4 Gully 34, adjacent road surface and post-hole 62, Trench 1; view west

with the road may represent an additional stretch of fencing perhaps to prevent animals straying into the ditch on the other side of the road. A discontinuous rough cobble spread (20) extended the hardstanding 4m to 5m south from the road edge and around the butt end of the dividing ditch (120). Similar, but much less extensive areas of cobbling were evident just inside the gate in Trench 1 (13) and in the north-west corner of Trench 3 (759, FIG. 8.6). The road appears to have been repaired or resurfaced again, for along its south side slight traces of a further thin gravel surface (106) were noted overlying the cobbles (FIG. 8.9b).

8.1.2 INTERPRETATION AND ANALOGIES

Phase 1

Though it did not prove possible to confirm the precise relationship with the ditches of the fort, the identification of the enclosure on its west side as an attached annexe is uncontentious, even if its function remains a matter of debate (below 12.4). Attached annexes are common features of Roman forts in northern and western Britain in all periods, though they have been surprisingly little studied in their own right. The majority of examples, as at Elginhaugh, occupy the whole of one side of the adjacent fort (Sommer 1984, 19).

In comparison with the number, size and profile of the ditches surrounding the fort (above 7.1), those which defined the annexe hardly warrant the term defences. Moreover, the fort was

further defended by towers at the gates and at intervals around the perimeter. No such provision seems to have been made for the annexe, at least within the limits of the more restricted examination of its perimeter. Similarly, where traces were detected, admittedly relating to the later subdivision of the annexe, these indicated that the dimensions of its rampart were also less than those of the fort. In general the number of ditches surrounding annexes is less than around their attached forts. Often, as at Elginhaugh, the number is reduced to only one, as for example at Dalginross (Robertson 1963: though the outer enclosure was not identified as an annexe), Hayton (Johnson 1978, fig. 13), Lyne (Steer and Feachem 1962) and Pen Llystyn. In the latter case the dimensions of the annexe ditch are also much smaller than those of the ditches surrounding the fort (Hogg 1968, 142, fig. 2). It would seem that the ditches and assumed rampart surrounding the annexe were primarily intended simply to demarcate it. This is further reinforced by the maintenance of the full system of defences between the fort and its annexe, a principle visible also at Ardoch (Breeze 1970), Dalginross, Dalswinton (St Joseph 1976, 8–9) and at most of the forts on the Antonine Wall (Hanson and Maxwell 1986, 86–91). Thus, the annexe defences may have been designed as much to contain as to exclude, particularly given the suggestion that large areas lacked any structures and may have served as a wagon park or area in which to tether horses (below 12.4).

Phase 2

The subdivision of annexes is not commonly attested, though aerial photographs of the broadly contemporary forts at Easter Happrew (NMR PB/1601) and Dalswinton (St Joseph 1976, 8–9) show ditches cutting across the annexes there, which presumably served this purpose.

Analogies for the arrangement of the funnel ditches are not forthcoming in a military context. However, their location, layout and profile are all consistent in the particular function that they indicate. They were clearly designed to channel movement, presumably of animals, from the west gate of the fort along the road and out through the single portal annexe gateway (FIG. 12.2). The gentle inner slope of the ditch would have reduced the possibility of broken limbs if the animals strayed off the road, while the steep outer face would have ensured that they could not get away. Nor was there any avenue of escape at either end, for the ditches ran into the outer ditch of the fort to the east and abutted the back of the annexe rampart to the west. The length of the gate, which must have projected beyond the back of the rampart into the annexe for some 6m, would have been an unnecessary obstacle to efficient through passage, though temporary wooden hurdles could have prevented stock from getting stuck between it and the ditches.

It is extremely difficult to find direct analogies for the form of the gateway despite its simple construction. No annexe gates have been excavated, so that the only available comparators are from the defences of forts and fortlets. Though single-portal gates based on more than six posts are attested, they are predominantly of second-century date. Moreover, in these later gates the increased number of posts is always matched by a decrease in the spacing between them to an average of 1.5m. This is not the case at Elginhaugh (below 8.1.3). Even those gates built on six posts, of which there are more first-century examples, tend to display closer spacing between posts than is indicated here. The closest analogy, though built on only six posts, is the south gate of the Flavian fort at Fendoch (Richmond and McIntyre 1939, 120–1), which opens into an annexe.

8.1.3 CONSTRUCTION AND RECONSTRUCTION

The secondary annexe gate was constructed on a series of large post-holes, as is usual in military contexts, spaced at regular intervals of *c.* 2.8m along the length of the structure. In contrast to the fort gates, however, the post-holes of the annexe gate were relatively small. They were subcircular or subrectangular in plan with maximum dimensions varying from 1.03m to 1.36m and depths from 0.74m to 0.97m (FIG. 8.8; PLATE 8.5), though smaller dimensions (0.9m maximum diameter and 0.6m deep) were recorded for the rear post-hole on the south

Trench 1

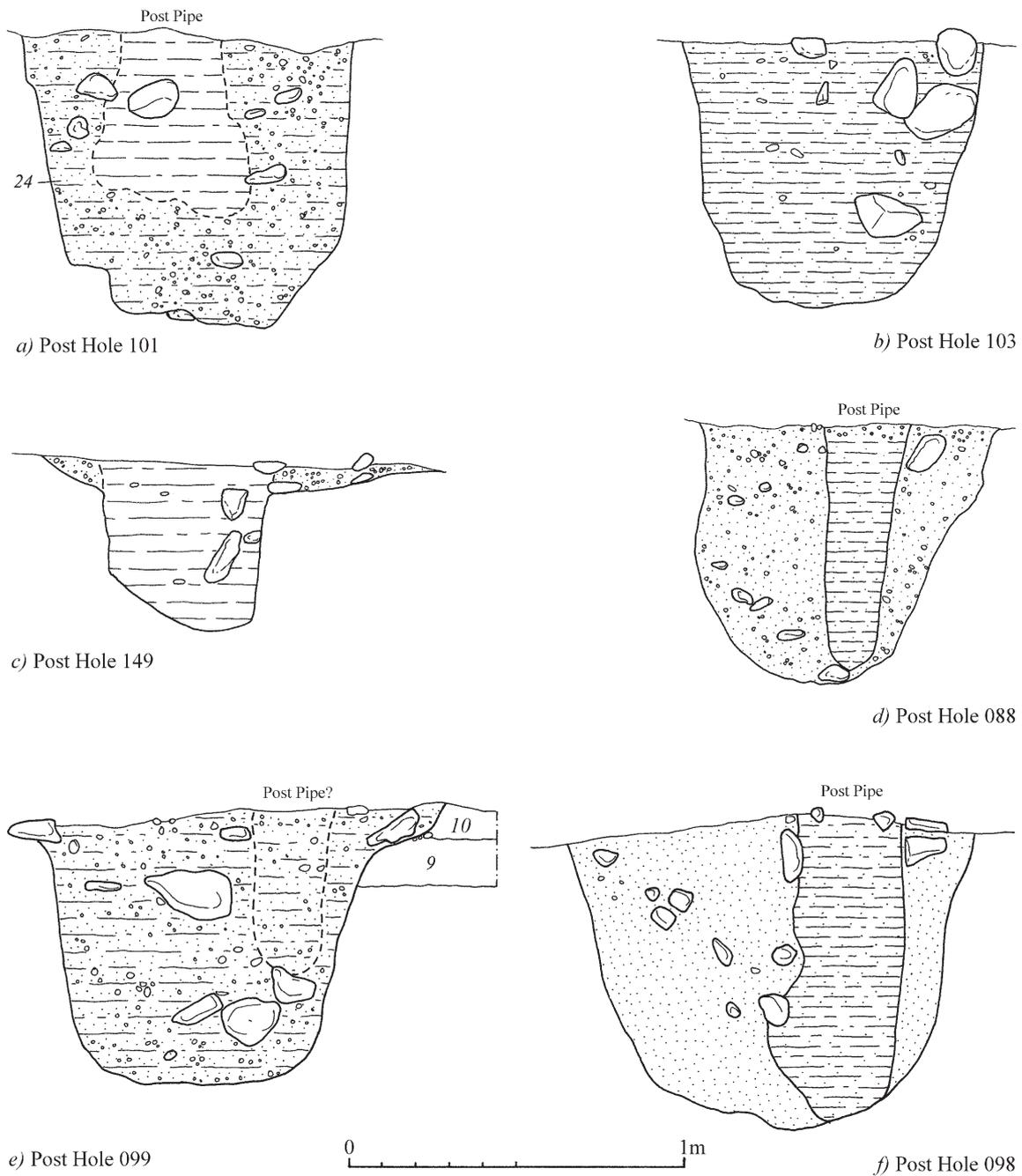


FIG. 8.8 Annexe gate post-hole sections: a. 101; b. 103; c. 149; d. 88; e. 98; f. 99 (Trench 1)

side (149). Post-impressions survived in four of the post-holes and indicated posts of cross-section equal to, or even larger than, those employed in the fort gates (compare TABLES 8.1 and 7.1). Despite this correlation, the implication of the relatively shallow depth of the post-holes in the annexe gate, which average only just over half that of the fort gates (compare FIGS 7.14–15 and 8.8), is that the superstructure is unlikely to have risen above the level of the first storey. A height of approximately 3m is assumed, as for the fort gates, to allow sufficient clearance for loaded wagons or mounted riders. Any linkage at that level from one side of the gate to the other is more likely to have been designed to ensure the stability of the structure and prevent



PLATE 8.5 Section of post-hole 98 showing post-impression, Trench 1; view west

inward collapse of the sides than to facilitate access across the top of the gate, given the likely lesser height of the rampart (see below).

The height of earth or turf ramparts is difficult to assess (above 7.1.3), but even assuming an angle of batter at both front and rear of 70° and a walkway only 1.5m wide, a rampart 3m wide at its base cannot have achieved a height of more than 2m. Since these parameters are tending towards the likely limits, and there is consistent evidence for an angle of batter at the rear of ramparts which is less steep on average (Hanson and Maxwell 1986, 81), a height closer to 1.75m would seem more probable. Alternatively, a height of 2.5–3m could have been attained if no walkway were provided. Whether or not this was then surmounted with a parapet is unascertainable.

TABLE 8.1: ANNEXE GATE-POST DIMENSIONS

Context	Dims (m)	Nature of survival
88	0.14–0.25	tapering impression
98	0.3	impression
99	0.2	impression
101	0.3–0.45	irregular impression

8.1.4 STRATIGRAPHY AND PHASING

The impression given by the line followed by the northern annexe ditch (803) in Trench 5 (FIG. 8.3) is that it is turning south to meet the dividing ditch (801) and that, therefore, the latter was primary. However, the evidence from Trench 1 indicates quite conclusively that the dividing ditch and its associated rampart and gateway are late in the stratigraphic sequence. The dividing ditch cuts through a Phase 1b demolition pit (53), a Phase 1a gully (138, FIG. 8.10), a Phase 1b post-hole (140), the latter seen only in section (FIG. 8.5c) and a stone-flagged surface of Phase 1c (49) (PLATE 8.2); the rampart base contains quantities of artefactual material (below 8.1.5) and overlies a construction slot of Building D (239) and a road surface (32) of Phase 1c (FIG. 8.6); while the post-holes for the gateway clearly cut through that same road surface (PLATE 8.2). Similarly, the funnel ditch (420) on the south side of the road cuts through a range of buildings of Phase 1b in Trench 3 (FIG. 8.11; PLATE 8.6; below 8.2.4), while by the time its northern equivalent (247) was dug, the outer fort ditch as recorded in Trench 7 (1272) had already silted up considerably (FIG. 8.7c). Thus the substantive subdivision of the annexe seems likely to be contemporary with the latest phase of use of the fort, that is after the demolition of its internal buildings.

Other demonstrably Phase 2 features include a construction slot (34) and associated post-holes (62, 76 and 80) (PLATE 8.4) which overlie a road drainage gully (63) of Phase 1c; the heavy cobbling (20) to the south of the road in Trench 1, since it appears to respect both the dividing ditch (120) and the rampart (FIG. 8.6); a small patch of cobbles (13) just to the south of the gate, which overlies demolition material (21) from the buildings; and a thin gravel spread (106) which overlies that cobbling and which may represent the final resurfacing of the road (FIG. 8.9b). That surface is in turn cut by another short length of construction trench (107).

This still leaves unexplained the S-shaped curve in the northern annexe ditch in Trench 5 (FIG. 8.3; PLATE 8.1). It is possible that the primary configuration was slightly different.



PLATE 8.6 Funnel ditch 420 cutting through buildings of Phase 1, which in turn cut through oven 496, Trench 3; view south

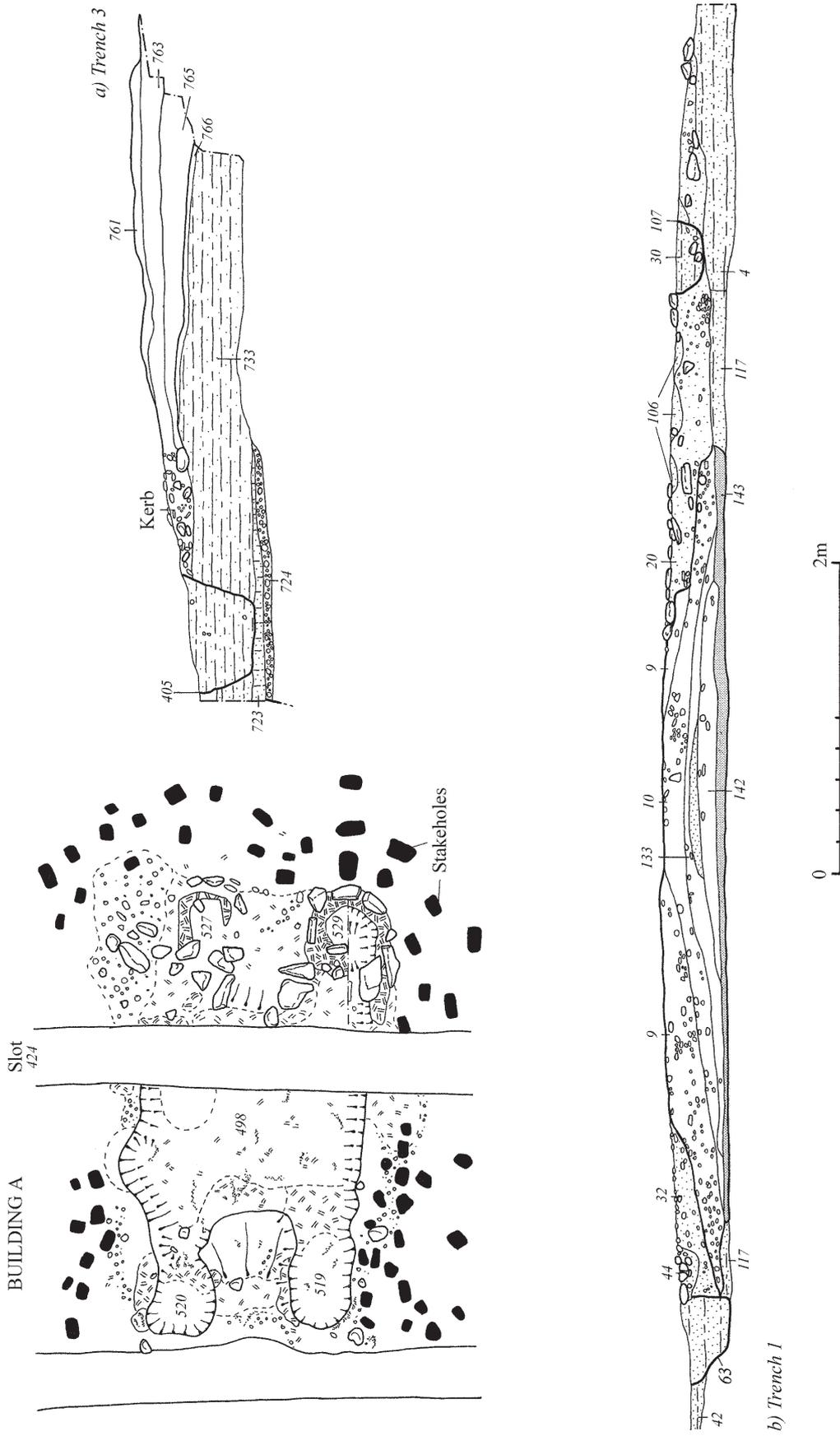


FIG. 8.9 Annexe road sections and detailed plan of oven 496 (Trench 3)

Originally 803 and 805 may have been two parallel ditches slightly offset from each other, for there are traces of an earlier possible butt end on the inside of the curve (832). Moreover, as already noted (above 8.1.1), the ditch in this area is considerably wider than elsewhere around the perimeter of the annexe, which would lend support to the suggestion that it had been remodelled. Indeed, there are signs of a possible recut (819) in one section through ditch 805 (FIG. 8.4b). But it may not have been a simple case of recutting the ditch because of slippage, for the annexe was probably subdivided at this point in Phase 1. The shallow gully (138/811) which runs parallel to the dividing ditch (801/120) immediately to its east is clearly an earlier feature, for ditch 801/120 impinges upon its line in Trenches 1 and 11. The gully is also cut by the inner annexe ditch (807) where this joins the dividing ditch in Trench 5 (FIG. 8.1). The fact that it contained demolition material suggests that the gully had gone out of use at the end of Phase 1c (below 8.2).

The subsequent history of the ditches varies. The north and south annexe ditches all appear to have silted up naturally, as do the extreme north and south ends of the dividing ditch (801). However, the butt ends of the dividing ditch adjacent to the entrance (801 and 120) were full of turf (FIG. 8.5c and e). Whether this indicates rampart collapse or deliberate infilling is uncertain, though it might be no more than the result of the absence of a berm between the rampart and the inturned ends of the ditch. The same might apply to the butt ends of the funnel ditches (247 and 420), which also encroached very close to the rear of the rampart, for they too were full of turf-derived material. This was particularly marked on the north side of the road, but here the ditch also contained quantities of charcoal and burnt daub above the dumped turf material, which is more suggestive of deliberate infilling.

The infilling of the central sectors of the funnel ditches is less clear cut. On the north side of the road the ditch appears to have silted up naturally, but on the south side there is an admixture of burnt daub and occasional lenses of charcoal in the lower fills (e.g. 97 in FIG. 8.7b). It is not clear whence the daub was derived, since there were no traces of buildings or other structures within the area defined by the funnel ditches (below 8.2), unless it results from the redeposition of earlier demolition material disturbed by the digging of the ditch. However, the presence of an oval rubbish pit (259), 1m by 1.3m across and 0.58m deep, cutting the outer edge of the northern funnel ditch in Trench 2 (FIGS 8.6 and 8.7b) suggests that demolition and site clearance was undertaken. This is further supported by the identification of a pit (85), 1m by 1.3m across, cylindrical in section and 0.9m deep, containing quantities of rubbish which cut through both the rampart and road edge in Trench 1 (FIG. 8.14e).

There are slight indications that the gate was also demolished. In one of the post-holes (101) the surviving post-impression was extremely irregular, as if it had been disturbed by the removal of the post; while in two others (103 and 149) large stones within the fill looked like they may have been derived from packing disturbed on removal of the posts, though in neither case did any impression of a post survive (FIG. 8.8).

8.1.5 ASSOCIATED FINDS

Phase 1

139 and 812, fills of dividing gully 138/811: iron knife blade (no. 175), several sherds of coarse pottery, including types 8, 69 and 152, 1 sherd of decorated samian (D49) from the same vessel as sherds from the fill of tree hole 1247 beneath Building G (below 8.3.5) and the outer fort ditch (1272), numerous fragments of animal bone including cattle, and cattle teeth
 804 and 817, upper fills of enclosing ditch 803 on north side: copper-alloy button-and-loop fastener (no. 18), 1 sherd of coarse pottery, 1 sherd of amphora, 2 flints
 1121, upper fill of enclosing ditch 1120 on north side: 5 sherds of coarse pottery, including type 195, 1 sherd of amphora, 1 sherd of decorated samian (D79), 1 piece of bottle glass

Phase 2

Road and associated features

- 13 and 20, cobbles south of road in Trench 1: 3 sherds of coarse pottery, including type 108, 1 sherd of mortarium, cattle teeth, vitrified stone
- 17, fill of gate post-hole 103, Trench 1: 1 sherd of coarse pottery type 58
- 24, fill of gate post-hole 101, Trench 1: 1 sherd of mortarium
- 30, fill of roadside construction slot 107, Trench 1: 1 sherd of decorated samian (D74), 3 sherds of coarse pottery
- 33, fill of roadside construction slot 34, Trench 1: 9 sherds of coarse pottery including types 94 and 140, 1 sherd of amphora, daub
- 71, fill of post-hole 70, Trench 1: 1 sherd of coarse pottery
- 106, gravel surface in Trench 1: 2 sherds of decorated samian (D51 and 54), 3 sherds of coarse pottery including types 58 and 212, 2 sherds of amphora
- 227, road surface between Trenches 1 and 2: 1 sherd of plain samian, 2 sherds of mortarium, 3 sherds of coarse pottery

Rampart

- 2, 11, 19 and 94, rampart base in Trench 1: 1 *as* of Vespasian (no. 28), rectangular-sectioned copper-alloy rod (no. 110), several sherds of coarse pottery, including types 34, 40, 58 and 137, 14 sherds of samian, including 1 stamp (S14) and 1 decorated sherd (D73), 1 sherd of mortarium, 1 melon bead, 4 fragments of animal bone, including rabbit, cattle teeth, charcoal

Dividing ditches

- 51, primary fill of dividing ditch 801: 1 sherd of coarse pottery, 1 nail
- 50, middle fill of dividing ditch 801: 2 sherds of mortarium, 2 sherds of amphora, 1 nail, 1 fragment of burnt animal bone, vitrified stone
- 54, 802 and 845, upper fills of dividing ditch 801: head of a copper alloy pin (no. 97), rectangular iron bar (no. 191), 3 sherds of coarse pottery, 1 sherd of amphora, 2 flints
- 119, upper fill of dividing ditch 120: 12 sherds of coarse pottery, 1 sherd of amphora, 2 sherds of decorated samian (D75 and 84), fragments of lava quern, unidentifiable iron, nail, 1 fragment of animal bone, cattle tooth, vitrified stone
- 808, upper fill of ditch 807: 1 sherd of coarse pottery, 1 flint

Funnel ditches

- 7, 212, 232 and 1271, upper fills of northern funnel ditch 247: 1 *dupondius/as* of Nero (no. 9), 1 *as* of Vespasian or Titus (no. 34), over 50 sherds of coarse pottery including types 40, 129, 198 and 207, over 50 sherds of amphora, 12 sherds of samian, including 2 decorated (D69 and 81), socket of spearhead (no. 120), iron reinforcing strip (no. 150), rectangular iron strip (no. 216), 6 nails, 1 piece of bottle glass, 2 fragments lava quern, numerous fragments of burnt animal bone, daub, charcoal
- 90, 92, 96 and 1274, middle fills of northern funnel ditch 247: copper-alloy cylinder (no. 92), fragments of copper-alloy rod (no. 108), melon bead, 9 sherds of coarse pottery including types 76 and 93, 6 sherds of amphora, 3 nails, several fragments of burnt animal bone, charcoal, some carbonised seeds including cereals
- 97, basal fill of northern funnel ditch 247: charcoal, vitrified stone
- 419 and 3, upper fills of southern funnel ditch 420: copper-alloy stud (no. 40), copper-alloy lock bolt (no. 55), curved copper-alloy strip (no. 106), over 50 sherds of coarse pottery including types 15, 16, 17, 34, 61, 92, 100, 125, 136, 138 and 157, over 25 sherds of amphora, 6 sherds of samian, including 3 decorated (D60–62), 1 glass counter, 1 piece of unidentified iron, 12 nails, 1 fragment of burnt animal bone, cattle tooth
- 448 and 452 middle fills of southern funnel ditch 420: 1 sherd of coarse pottery, 1 piece of bottle glass, 2 nails, charcoal
- 449, 454, 455 and 457, basal fills of southern funnel ditch 420: 7 sherds of coarse pottery, 1 sherd of decorated samian (D63), several sherds of amphora, 2 pieces of bottle glass, 1 piece of unidentified iron, charcoal

Demolition

- 14, fill of pit 85 cutting road and rampart in Trench 1: 8 sherds of coarse pottery, 3 sherds of amphora, 2 sherds of samian, 1 fragment of bottle glass, 1 piece of unidentified iron, several fragments of animal bone, cattle teeth, 1 flint, charcoal
- 226, fill of pit 259 cutting funnel ditch 247: 6 sherds of coarse pottery, 1 sherd of mortarium, 4 sherds of amphora, 3 sherds of samian, including 1 decorated (D58), fragments lava quern, large iron buckle from armour (no. 166), numerous fragments of burnt animal bone, including sheep/goat and pig

8.2 ROADSIDE DEVELOPMENTS**8.2.1 DESCRIPTION**

Constraints of both time and resources required that examination of the annexe be more limited than that of the fort (above 1.2). Apart from the enclosing ditches, the only feature of the annexe known before work started on the site was the road, clearly visible on the aerial photographs (PLATE 1.1), which continued the line of the *via principalis*, though deviating slightly as it left the west gate of the fort. Geophysical survey extending over some 12,000m² within the interior of the annexe suggested the presence of ditches, pits and hearths in the immediate vicinity of the road (above 2.2). Accordingly, five trenches were laid out to investigate this focus of activity (FIG. 12.4). Two straddled the road, the first where the annexe dividing ditch abutted it (Trench 1), and the second where the line deviated after leaving the fort (Trench 4). Three more trenches were located alongside the road, one on either side of it to the west of the dividing ditch (Trenches 2 and 3) and one (Trench 9) on the north side of the postulated continuation of the road line to the east. The total area of these five trenches was some 1650m².

The description which follows is subdivided by phase of activity rather than by trench to facilitate a better understanding of the activities across the whole of the annexe. For an explanation of, and justification for, the phasing, see 8.2.4 below.

Phase 1a

The aerial photographs also suggested differential preservation of the road across the annexe and this was confirmed by excavation. In the eastern half the road was extremely well preserved, particularly in Trenches 1 and 4, but to the west of the secondary subdividing ditch (801/120), towards the limit of the area available for excavation, the road had been entirely removed by the plough (Trench 9).

The road was sectioned in two places, in the centre of Trench 1 and at the eastern end of Trench 3. It was extremely solidly constructed, though slight differences were noted between the two sections (FIG. 8.9a and b; PLATE 8.7). In Trench 3 the road was made up of a primary dump of compacted sandy gravel and pebbles (765) up to 0.21m thick with a concreted upper surface laid directly above the turf of the old ground surface. In Trench 1, however, there were indications that a shallow cut had been made, perhaps to level the ground, though this had then been deliberately filled with turf (143) before the primary dump of compacted sand and gravel, up to 0.12m thick, had been placed on top (142). This in turn was sealed by a further layer of similar material (133), up to 0.11m thick, concreted to form the road surface. The original width of the road, recorded in Trench 1, was 4m. The road was extensively resurfaced during this phase, as attested in both Trenches 1 and 3 (below 8.2.4). An additional layer of compacted gravel (10) some 0.15m thick had the effect of widening the road to some 4.9m where the full width was uncovered in Trench 1, as well as increasing the height of the camber (FIGS 8.9b and 8.10).

The main primary features identified alongside the road, all located on its south side, were a series of ovens or kilns and associated pits. The best-preserved oven, 496, lay at the west end of Trench 3 (FIG. 8.11). It consisted of a central subrectangular firing pit 1.1m by 1.4m and 0.2m



FIG. 8.10 Plan of Trenches 1 and 2, Phase 1

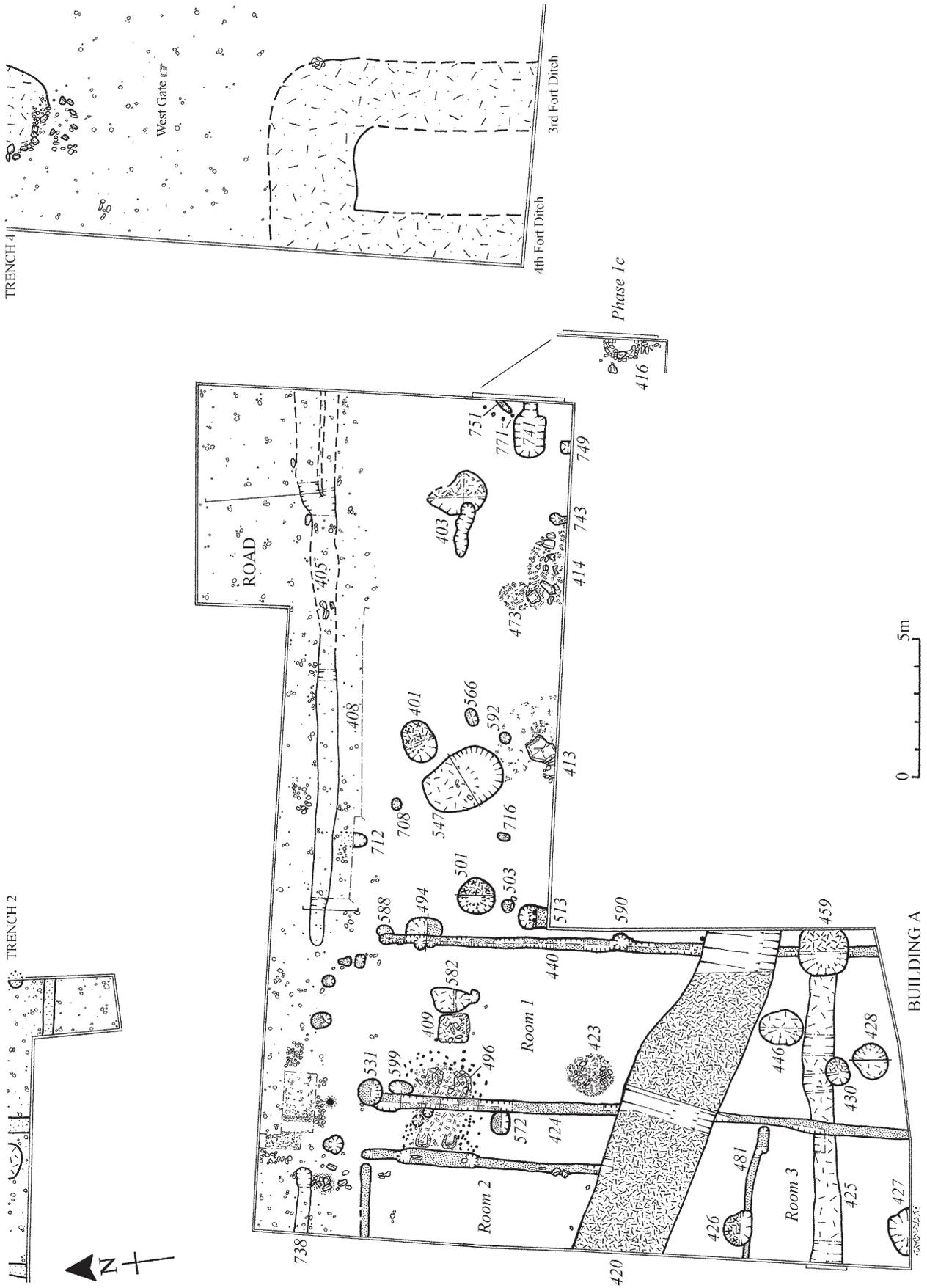


FIG. 8.11 Plan of Trench 3



PLATE 8.7 Section through road, Trench 1; view east

deep with flues at each corner forming an H-shaped structure with its long axis east–west (FIG. 8.9; PLATE 8.8). The flues were best preserved on the eastern side (527 and 529). They were partly defined by sandstone slabs and clay-lined, the lining continuing a short distance into the firing pit (498), narrowing the connecting neck. The kiln had clearly been used, probably on several occasions (see below). The clay lining was fired orange-red and the firing pit full of ash, charcoal and small quantities of carbonised seeds (see below). The temperatures attained, however, were relatively low, for only the first 0.03–0.04m of the clay lining had been fired and discoloration of the subsoil beyond from heat penetration was limited. Moreover, the superstructure, of unfired or partially fired clay, appeared to have been pushed down into the flues. Immediately surrounding the structure, except where they had been removed by a later wall trench down the west side, was an irregular double row of stakeholes averaging 0.1m in cross-section and 0.1m deep. The fact that the stakeholes were close to the edge of the kiln and completely surrounded it suggests that they were intended to support some form of raised platform or floor rather than merely a wind-break. This, and the presence of charred emmer, spelt, barley and oats in the firing pit (below 11.2), would seem to indicate that the most likely function of this structure was a grain-drying oven. Indeed, the H-shaped layout is not dissimilar to the surviving sub-floor remains built in stone of grain-drying ovens from villa sites of the third and fourth centuries A.D. in lowland England (Morris 1979, 5–22, figs 9–10, 14).

A group of simpler oven or kiln-like structures was situated at the eastern end of Trench 3 (FIG. 8.11), though only one was completely exposed as the rest lay largely, or in part, beyond the area under excavation. The most completely excavated example (403) consisted of an oval stoke-hole or firing pit, 2.4m by 1.5m and up to 0.25m deep, with a channel or flue, 1.8m long and 0.5m wide, dug some 0.25m deeper extending out from its west side (PLATE 8.9). Both the stoke-hole and the flue were filled with ash and charcoal and showed clear signs of burning in situ, for the sandy subsoil surrounding the flue and the west end of the stoke-hole adjacent to it had been reddened by the heat to a depth of up to 0.09m.

A second example (741) was situated nearby in the south-east corner of the trench. It was



PLATE 8.8 Probable grain-drying oven 496, Trench 3; view east

similar to 403 with a shallow (0.3m deep) stoke-hole, 1.5m by 1.1m, linked to a slightly deeper flue 0.4m wide (FIG. 8.12a). Like the better explored example the orientation was east–west, though in this case the flue was on the east side of the stoke-hole and disappeared under the baulk. Again the subsoil surrounding the flue and the adjacent end of the stoke-hole had been heat-affected and turned orange or red.

A possible third example was represented by the very shallow remains of the end of a further flue channel (751) immediately to the north of 741 (FIG. 8.11 and 8.12a). This suggested that the oven or kiln-like structure was orientated north-east by south-west, the bulk of it located beyond the excavated area. A group of at least four stake-holes (771) were noted curving round the north side of the structure, reminiscent of those surrounding the grain-drying oven (496). The ends of two further very similar flue channels (743 and 749) projected north from the southern edge of the trench. Both were *c.* 0.4m wide containing ash and charcoal, though their depths varied from 0.1m to 0.23m, and the subsoil surrounding them showed signs of burning in situ. If they were of similar form to those more fully excavated examples described above, they would have been orientated north–south with the stoke-hole to the south.

The precise function of this group of ovens is not immediately obvious. They are all similar in character, with a single flue channel and stoke-hole, and show signs of burning in situ, but only one had any trace of associated structural features. Though a sample from one flue (743) did contain carbonised grain (below 11.2), there were insufficient plant remains to lend much support to its interpretation as a grain-drying oven. The significance of the single, burnt fish vertebra, not identifiable to species, from the flue of the most fully excavated example (403) remains enigmatic, but would not alone seem sufficient to justify their identification as field ovens.

The slight remains of the base of a more standard form of cooking oven (473), consisting of

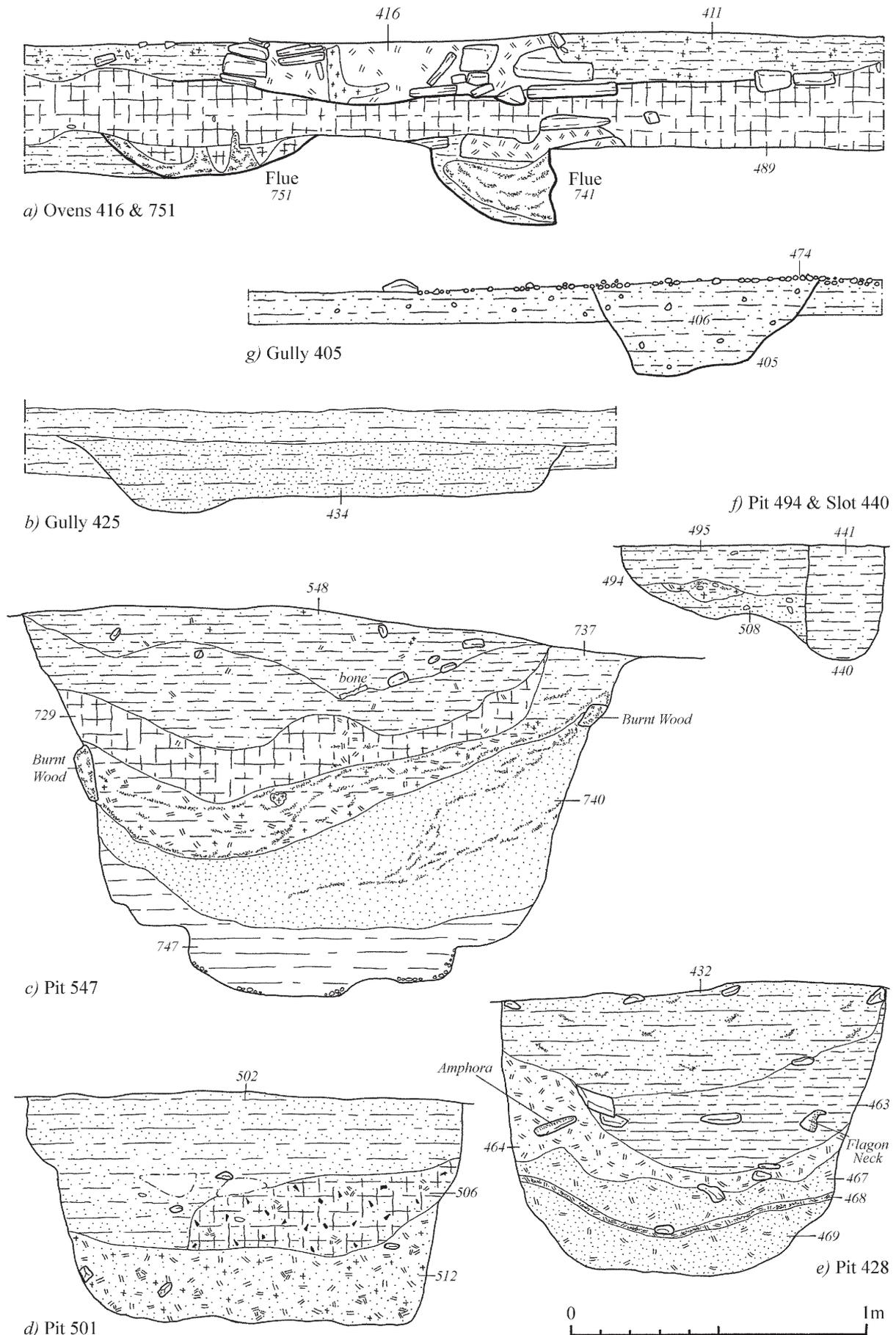


FIG. 8.12 Sections through pits, ovens and other features: a. ovens 416, 741 and 751; b. gully 425; c. pit 547; d. 501; e. pit 428; f. pit 494 and construction trench 440; g. gravel surface 474 overlying gully 405 (Trench 3)



PLATE 8.9 Road with gully 405, Phase 1a oven 403 and later ovens 413, 414 and 416, and unexcavated pits, east end of Trench 3; view south-west

an oval patch of fired and unfired clay 1.3m by 1m, were identified immediately to the west of the above group of five ovens. They lay partly beneath, but offset from, a later and better preserved example (414). Associated rake-out material (472) contained ash, charcoal and carbonised cereal remains, though not in any great quantity (below 11.2).

This area of ovens or kilns seems to have been cordoned off from the rest of the annexe to the south of the road by a shallow gully (425). This was uncovered at the southern end of Trench 3 running parallel to the road at a distance of some 18m (FIG. 8.11). The gully was flat-bottomed or U-shaped, surviving to a depth of no more than 0.25m, and varying in width from 0.9m to 1.7m (FIG. 8.12b). The clean silty sand infill with pebbles perhaps suggests that it served also as a drain or soakaway.

Several pits, mainly of uncertain function, were dotted around the area both to the north and south of the road. Immediately to the north of gully 425, and apparently respecting it, was a subcircular, bowl-shaped pit (446) 1.6m in diameter and 0.43m deep (FIG. 8.11). Its primary fill of sandy silt suggested that it had been left open for some time before being infilled with clean sand. Two adjacent pits just to the east of the postulated grain-drying oven (496) in Trench 3 also probably relate to this primary phase. Pit 494 was oval, measuring 1.3m by 0.7m and 0.25m deep, and contained burnt daub, charcoal and various artefacts (below). It cannot have been a demolition pit for the annexe buildings, for its backfill was cut by a wall trench (440) of Building A (FIG. 8.12f). Presumably it served as a rubbish pit. Between it and oven 496 was a shallow amorphous pit (582) measuring 1.4m by 0.9m, but only 0.23m deep. It contained a clean sandy fill and its function remains unclear.

Several pits and other isolated features in Trench 2 seem likely to relate to Phase 1a (FIG. 8.10), though could be from Phase 1c. Situated at the eastern end of Trench 2, centrally located within a shallow pit or scoop (263) containing charcoal and signs of burning in situ, was a small platform of rough stones some 0.75m square (FIG. 8.13b). This probably formed a working surface of some kind, though the nature of the process involved is uncertain other than that it seems to have involved heat. Two adjacent shallow pits at the west end of the same

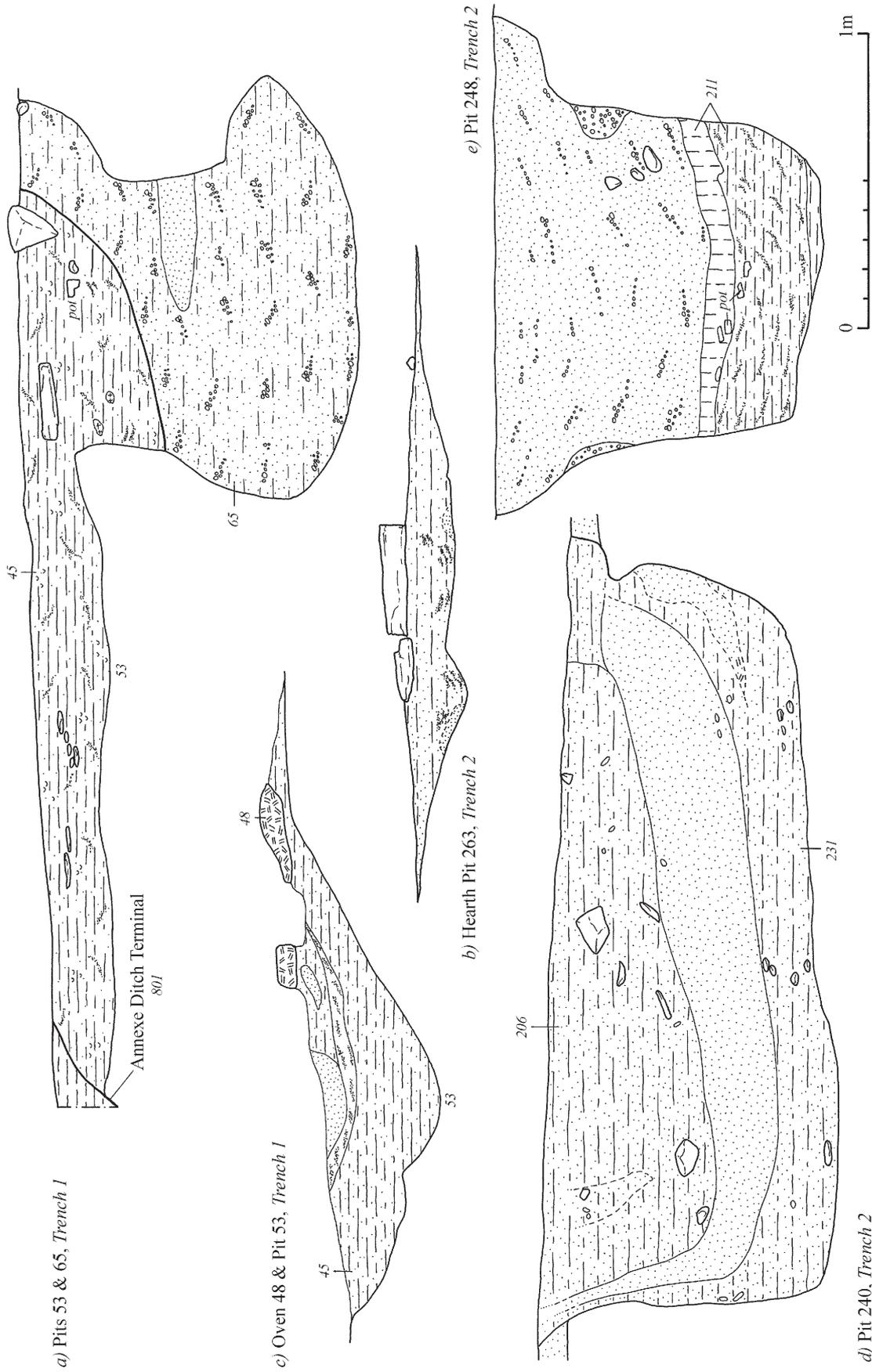


FIG. 8.13 Sections through pits and ovens: a. pits 53 and 65 (Trench 1); b. hearth pit 263 (Trench 2); c. oven 48 and pit 53 (Trench 1); d. pit 240 (Trench 2); e. pit 248 (Trench 2)

trench showed similar characteristics, with heat-reddened sides and an infilling of heat-affected sand and charcoal, but little in the way of finds. Pit 243 was subrectangular, 1m by 0.88m across and 0.23m deep with straight sides and a flat bottom; pit 244 was subcircular, between 1.2m and 1.4m in diameter and no more than 0.13m deep, with an irregular bottom. A deep subrectangular pit (248) nearby may have been an associated rubbish pit: 1.6m by 1.4m across by 1.09m deep (FIG. 8.13e), it contained charcoal, bovine teeth and quantities of pottery in its lower fills, though the contents of each were not separately recorded (below 8.2.5).

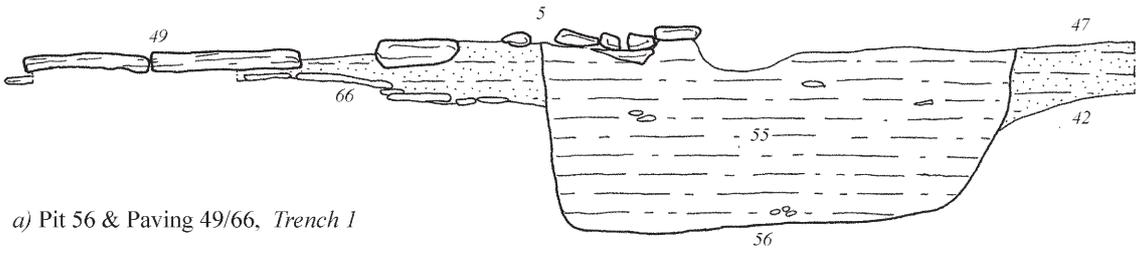
Three adjacent features in Trench 1 on the north side of the road more certainly relate to this primary phase (FIGS 8.10 and 8.14). A patch of broken flagstones (66) covering an area of 1.7 by 4.6m was bounded to the south by a shallow U-shaped gully or pit (58), 0.55m wide and 0.15m deep, whose full extent was not determined. Two metres to the east was a large oval pit (65) 1.1m by 1.7m across and 0.92m deep (FIG. 8.13a). When sectioned, this pit proved to be heavily undercut, creating a rather bulbous profile and suggesting that it may have contained a liquid or, more likely, that it was regularly cleaned out. Its gravelly sand filling was devoid of finds. A further isolated patch of cobbles (67) in the north-west corner of this trench may also be related to this phase, since it did not become apparent until after a second stage of cleaning.

The most westerly area examined alongside the road in Trench 9 (FIG. 8.15) was characterised by a number of pits and some traces of possible ironworking. An irregular, shallow, quadri-lobate depression (1407), some 0.1m deep and 0.75–0.85m in diameter (FIG. 8.16), was situated towards the centre of the trench. It contained quantities of iron objects, mainly nails or unidentifiable fragments, but including a T-bar and two crossed rods, and small spherical metallic droplets recovered from the environmental sampling of its silty sand fill, which may represent a dump of waste from metalworking, though the feature showed no sign of burning in situ. An adjacent rubbish pit (1433, FIG. 8.14d) 1.6m in diameter and 0.85m deep contained coal and some iron slag (below 10.11), as well as a mason's wedge, and may be associated. However, neither the precise nature or location of the ironworking was identified.

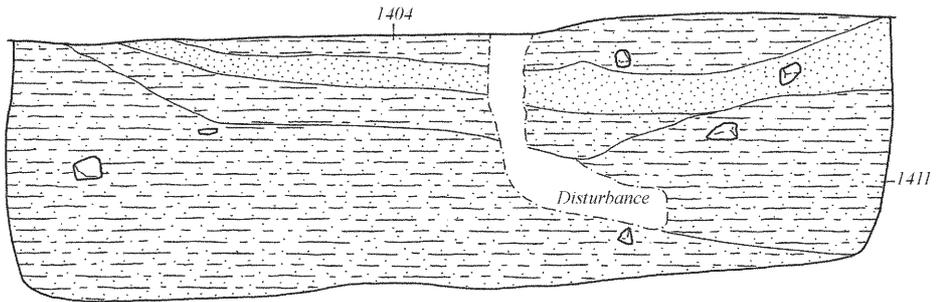
Several other adjacent pits may also be contemporary. Pit 1401 was 1.5m in diameter and 1.2m deep. It showed three distinct layers of filling but contained few finds, though one piece of slag may indicate some connection with the ironworking noted above. Pit 1419 was 0.9m in diameter and 0.85m deep, with only a few finds in its two layers of fill (FIG. 8.14c). Its steep sides and bowl-shaped bottom suggest an original purpose other than just for the disposal of rubbish. The presence of quantities of prehistoric as well as Roman pottery may indicate the disturbance by the Romans of an earlier pit. Pit 1431, situated up against the north baulk, was 2.5m in diameter and 0.7m deep with vertical sides and a flat base. The only clues as to its original function were a few carbonised cereal grains from its primary clean sandy fill. This suggested that it had been open for some time, thus allowing carbonised material to be blown in. The upper fill, however, indicated final use as a rubbish pit. Pit 1415 was 1.25m in diameter and 0.6m deep. The limited recovery of finds and high gravel content of its primary fill again suggest that rubbish disposal was not its primary function. Pit 1403 was oval, 2.3m by 1.8m and 0.65m deep, with vertical sides and a flat bottom. Five fills were apparent (FIG. 8.14b), two of which were rich in finds. A relatively clean sandy penultimate fill suggested that rubbish deposition was interspersed with make-up layers. Finally, a shallow subrectangular pit (1446) containing no finds, sectioned against the northern edge of the trench, was of uncertain function.

Phase 1b

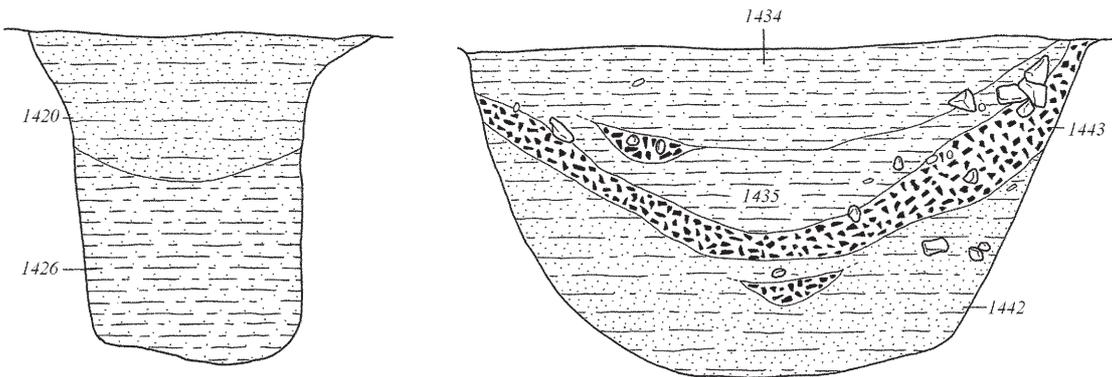
The start of the next phase was heralded by a further resurfacing of the road, best attested in Trench 1 (9) but evident also in Trench 3 (761), which seems to have had the effect of shifting it slightly to the north while reducing its overall width by 0.4m (FIGS 8.9 and 8.10). At the same time, however, the width of the main spine of the road appears to have been increased, although this may be no more than a feature of the differential survival of the two surfaces. The southern edge of the road is assumed to have been defined in Trench 3 (FIG. 8.11) by a discontinuous drainage gully (405/738) some 0.65–0.8m wide and 0.4m deep, which bifurcated



a) Pit 56 & Paving 49/66, Trench 1

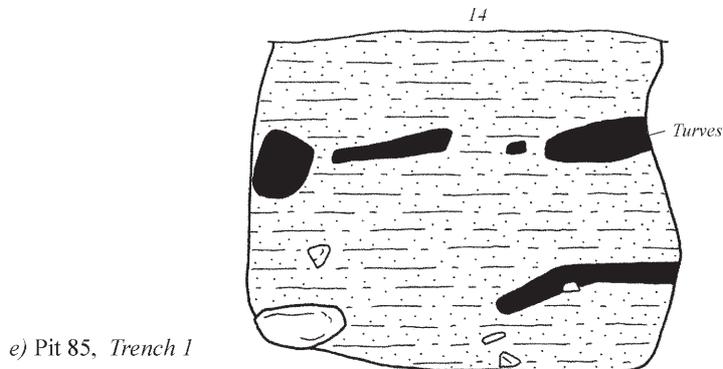


b) Pit 1403, Trench 9



c) Pit 1419, Trench 9

d) Pit 1433, Trench 9



e) Pit 85, Trench 1



FIG. 8.14 Sections through pits and other features: a. pit 56, flagstones 66 and cobbles 49 (Trench 1); b. pit 1403; c. pit 1419; d. pit 1433 (all Trench 9); e. pit 85 (Trench 1)

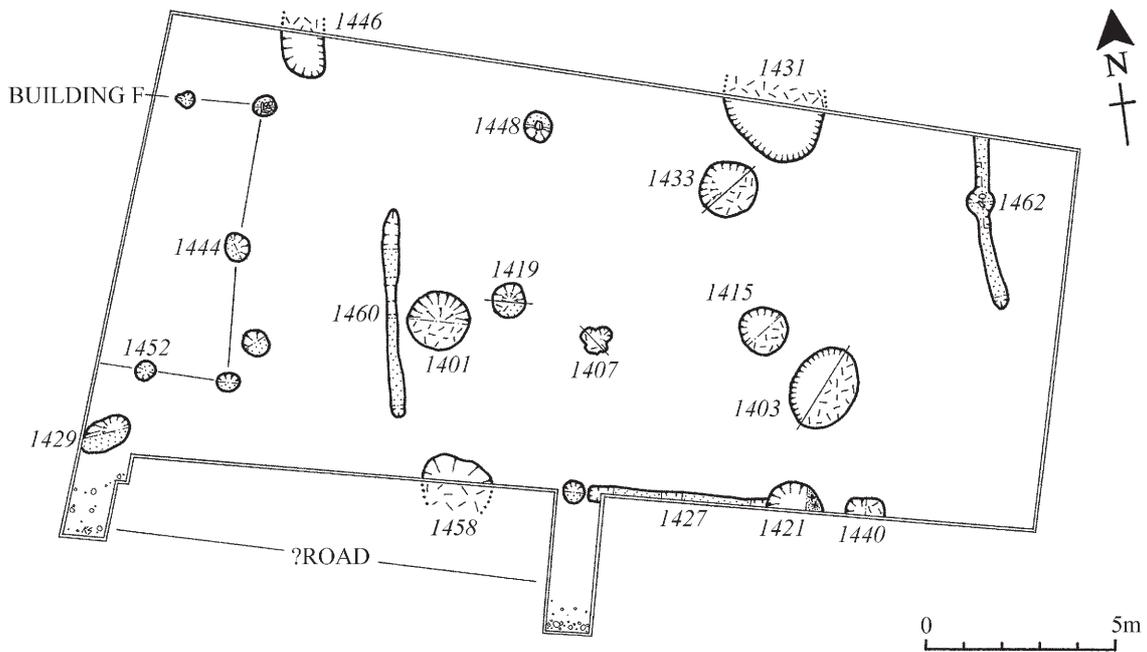


FIG. 8.15 Plan of Trench 9

towards the eastern end of the trench as it headed for the outer ditch of the fort (PLATE 8.9). The new road surface was accompanied by a more general spread of gravel to both the north and south (12, 18, 210 and 408, FIGS 8.10 and 8.11). How widespread this surface was originally is uncertain, but it survived for no more than 4m from the road on either side.

This surface, where it survives, seems best interpreted as providing a base level for the series of timber buildings which characterise this phase of activity, even though some of their construction trenches cut through it. These buildings were located on both sides of the road, though those to the south in Trenches 1 and 3 were the better preserved and most fully exposed (FIG. 12.4). No complete buildings were uncovered within the limits of the area examined, but the elements revealed seem to have made up at least six buildings (A–F), and possibly eight, depending on how the elements were linked together. The buildings were aligned approximately north to south fronting directly onto the road on its north side in Trench 2 (FIG. 8.10), though set back some 2.5m from its edge to the south in Trench 3 (FIG. 8.11;

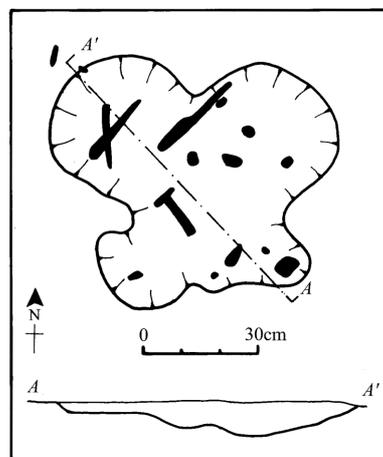


FIG. 8.16 Detail plan and profile of metalwork pit 1407, Trench 9

PLATE 8.6). The relationship with the road was less easily determined in Trench 9 (FIG. 8.15), since it survived as no more than an increase in the concentration of small stones in the ploughsoil.

The most extensively uncovered building on the south side of the road (A), measuring at least 20m by 11m, consisted of five elements (FIG. 8.11). To the east was a single room (1) 6m wide internally by at least 19.7m long with an open front to the north. A 2m wide passageway separated Room 1 from Room 2 to the west. This measured at least 2.9m by 8.5m, though the larger dimension probably extended to 13.8m, as far as a short cross-wall (481). Unlike Room 1, Room 2 was closed to the north. That the passageway between them served as the main entrance or as a thoroughfare is suggested by the comparatively greater wear suffered by the remains of the two flues (519 and 520) of the earlier grain-drying oven (496) preserved on this side of the west wall (424) of Room 1 (FIG. 8.9; PLATE 8.8). The passageway probably extended as far as the cross-wall (481), whose east end abutted the west wall of Room 1, though its southern end had been removed by a later funnel ditch (420). The two walls (481 and the southern extension of 424) defined Room 3, whose dimensions were at least 5m by 6m.

The fifth structural element consisted of a series of six post-holes within the gap between the road and the north end of the building. Four were approximately in line along the southern edge of the road and may have defined a veranda or, given that they coincide with a gap in the roadside drainage gully (405), a fence. The function of the other two post-holes is unclear. A seventh post-hole (712) beyond Building A to the east may continue the same alignment.

The only internal feature associated with the building was a rectangular pit (409), measuring 1m by 0.68m and 0.25m deep, lined with sandstone slabs some of which had collapsed into its interior (PLATE 8.10). It was almost centrally positioned in Room 1, its sides aligned with those



PLATE 8.10 Collapsed stone-lined pit 409, Trench 3; view west

of the building. Its original function is unclear, but its fill contained quantities of carbonised grain, some of which had sprouted (below 11.2.6), fragments of lava quern and what may have been copper alloy metalworking debris, though unfortunately no samples of the latter were retained. The filling (509) spilled out across the floor of the building suggesting that it represents material dumped during demolition. Similar material was also recovered from the contemporary roadside gully (405) and a nearby pit (547).

The latter was one of at least two pits to the east of Building A (FIG. 8.11) which appear to have been in contemporary use. It was ovate, measuring 3m by 2.05m and 1.32m deep. Its near vertical sides and segmented, but almost flat, bottom suggest that it may originally have been lined (FIG. 8.12c). Fragments of burnt wood recorded at two points on the side may derive from this lining. Some form of storage function, perhaps even for water, seems likely, for the pit certainly penetrated the modern water table. The lower fills consisted of clean, wet, silty sand, though interspersed within one was a layer of charcoal and burnt sand. Above that were demolition-derived fills containing large quantities of charcoal, carbonised cereal remains (below 11.2) and fragments of burnt wattle and daub, presumably from the demolition of Building A. A group of four small post-holes (592, 566, 708 and 716) appear to cluster around the pit and may be related to it, perhaps forming a support for some form of lifting device. The last three are almost equidistant from each other and are reminiscent of the tripod arrangement of posts noted surrounding the well in the *principia* (above 4.1.1).

Pit 501, less than 1m from Building A, was subrectangular measuring 1.35m by 1.47m and was 0.78m deep. Like pit 547 its sides were nearly vertical and ended in a flat bottom (FIG. 8.12d). Quantities of purple clay in the lower fills suggested that it may originally have been lined, though no trace of a clay lining was found in situ. The other notable feature of the upper fills was the presence of quantities of good quality coal. Again some storage function seems likely, perhaps even for coal.

All that was uncovered of Building B was part of one wall (110) some 2.5m long in the south-east corner of Trench 1 (FIG. 8.10). This presumably represents the west wall of a further strip building. The short stretch of walling appeared to end to the south against a patch of large stones, though not in any clear-cut way, perhaps demarcating an entrance. Similar cobbling also appeared to be contained by the wall slot at its northern end and may represent part of an internal surface, though both patches could be fragmentary remains of the extensive heavy cobbling of Phase 2 (above 8.1). A post-hole (109) at the north end of the slot, though cutting into it, may indicate a repair or the provision of additional support for the gable end of the building. An adjacent shallow pit (134), truncated by the later funnel ditch, may also be associated.

Building C was located some 16m to the west in the south-west corner of Trench 1 (FIG. 8.10). A slightly irregular north-south slot (131) ran some 5.2m from the southern edge of the trench terminating in a post-hole (147). Two further post-holes (114, 126) served to demarcate the end of the building and may have defined a doorway. Beyond that to the north on the edge of the road a single post-hole (145) may have formed part of a veranda or fence similar to that seen to the north of Building A. Building C seems to have been divided into two rooms at the mid-point of its surviving visible extent, the partition wall formed by a line of three post-holes. The most easterly (124) appeared to impinge on wall slot 131, so that the subdivision of the building may have been a secondary feature. A single post-hole (140) some 6m to the east, seen only in section (FIG. 8.5c), may be all that remains of a further structure destroyed by the later dividing ditch (120), though its proximity to the dividing gully (138) may indicate some link with the original subdivision of the annexe (above 8.1.1).

Only fragmentary remains survived of Buildings D and E, fronting onto the road on its north side, making it difficult to determine precisely how many structures were involved (FIG. 8.10). A construction slot (239) marking the front of Building D/E was examined in three places: at the east end of Trench 1 and at the west and east ends of Trench 2. It was not ascertained whether this was a continuous slot, demarcating the front of one building at least 28m long, or whether it was discontinuous, signifying a series of adjacent structures. The latter, however, seems the more likely. Several possible subdivisions at right angles to this slot were identified,

mainly located in Trench 2. The two in the eastern half of the trench were visible for a length of only 4m. One (238) appeared to butt end at a post, but the other (249) simply ceased to be detectable at the point of junction between the surviving cobble surface and the sandy subsoil, suggesting that it may have been truncated by later agricultural activity or had not penetrated the subsoil and, as across much of the fort, remained invisible at any higher level because of the heavily worm-sorted upper soil horizons. These two wall trenches perhaps defined the east and west walls respectively of two adjacent buildings (D and E) with a 5m gap between them. The line of the east wall of Building E may be indicated by a single surviving post-hole (258) a further 5m away in the edge of the trench. A nearby possible post-pad (256), if correctly identified as structural, is presumably associated. The remains of putative Building D are more complex, consisting of a series of post-holes (245–6, 253–5 and 260), the latter a double post, and a short slot (237) only 1.7m long, which stopped short of the front wall trench. These elements form no obvious pattern, but seem likely to represent internal subdivisions and/or repairs. However, no west wall was identified for this building, though a line of larger stones (43) at right-angles to the main east–west construction slot (239) in Trench 1 (FIG. 8.10) might mark the line of the western edge of the cobble flooring.

Several pits are likely to have been associated with Buildings D and E. One oval example (235), located within Building D, was 1.7m long, 1.2m wide and 0.42m deep with a slightly irregular bottom. It contained quantities of pottery and other artefacts as well as some burnt daub, perhaps indicating that it served as a rubbish and/or demolition pit. Pit 236 was located between Buildings D and E. Subrectangular in plan, it measured 1.9m by 1.1m and 0.85m deep with near vertical sides and a flat bottom. The form of the pit and its primary fill of clean silty sand suggest some storage function. The presence of abundant pottery and other artefacts, including bovine teeth, unidentified cereal grains and quantities of charcoal in the upper fills may derive from its subsequent re-use as a rubbish pit. A small shallow pit (265), approximately 1.2m by 0.65m and 0.4m deep, running parallel with and immediately adjacent to the west wall of Building E, was filled with clean silty sand offering no clue as to its function. Located exactly midway between Buildings D and E, and similarly aligned with its long axis at right angles to the road, a narrow rectangular pit (240) 2.7m long by 1.5m wide and 0.98m deep had clearly been lined, perhaps with wattle and daub (FIG. 8.13d). A layer of dark silty sand with concentrations of finely comminuted charcoal and burnt daub fragments, containing quantities of pottery and other finds, covered the bottom of the pit and continued up its sides. Above this was a layer of clean sand and above that a layer of demolition infill, again rich in finds. The function of this pit is uncertain, though storage is a strong possibility. Both the primary and tertiary fills (231 and 206) have the characteristics of demolition material, though the former seems likely, at least partially, to reflect the original lining of the pit. The intervening clean sand layer may have been deposited to prevent the lining catching fire during the demolition process. Finally, part of a small circular pit (37) was noted in the north-east corner of Trench 1 at the western end of Building D, though it was not excavated.

A further possible building was represented by a line of five post-holes (68, 70, 72, 74 and 84), including two sets of pairs, in Trench 1 set back some 3m from the northern edge of the road (FIG. 8.10). However, the absence of other structural elements may point to identification as nothing more elaborate than a fence line, and they may better relate to Phase 2 (above 8.1). An adjacent isolated shallow pit (56), of which only a half section was revealed (FIG. 8.14a), seems to relate to this phase on stratigraphic grounds (below 8.2.4), though its function is uncertain.

Finally, traces of buildings were also recovered on the north side the road further west in Trench 9 (FIGS 8.15 and 12.4). The clearest example (Building F) at the western end of the trench was defined by five post-holes outlining a rectangle 7.5m by 3.5m, though whether it represents the end of a building aligned with its long axis parallel or at right angles to the road is uncertain. A sixth, slightly larger, post-hole towards the south-east corner may have formed part of the same structure, though it was slightly out of alignment and may, therefore, represent a repair. The other building remains in Trench 9 consisted of disconnected slots and occasional post-holes, none of which combined to make any coherent structure. Two parallel slots (1460,

1462), both some 5m long, were perhaps too far apart (15m) to be the opposite sides of a single building without more intermediate roof support than a single stone-packed post-hole (1448) positioned some 4m east of slot 1460. However, the fragmentary state and very truncated surviving depth of the slots (0.1m) suggests that other structural traces may have disappeared as a result of the agricultural activity which had destroyed the adjacent road. A third slot (1427) of similar dimensions was noted along the southern edge of the trench. Though it spanned some of the gap between the other two, it was not quite at right-angles to them and may not be related. However, the fact that all these slots were indeed structural is confirmed by the presence of associated stone-packed post-holes: one (1426) continuing the line of slot 1427 at its western end; the other integral to slot 1462.

Phase 1c

The third phase of occupation in the annexe was again marked by the resurfacing of the road, though without affecting its width. Slightly coarser and less compacted than earlier surfaces, a layer of sandy gravel (32) was present towards the sides of the road in Trench 1, particularly on the north where the edge abuts and partly underlies a kerb of larger stones (44). Immediately beyond the kerb was a drainage gully (63) 0.56m wide and 0.22m deep, traced for some 8m (FIGS 8.9b and 8.10).

Four oven-like structures (413, 414, 416 and 423) seemed to be spaced at regular intervals running in a line not quite parallel with the road and some 6–8m distant from its southern edge in Trench 3 (FIG. 8.11; PLATE 8.9). Assuming a fifth example in an area not examined, the spacing between the ovens was almost exactly 6m centre to centre. The most completely exposed example (423) consisted of a subcircular base 1.5m in diameter made up of rounded cobbles embedded in clay reddened by oxidisation, though not entirely baked through. The other three (413, 414 and 416) were only partly visible as they extended beyond the edges of the trench. The latter two were broadly similar in character to 423, but utilised sandstone blocks in their bases rather than water-worn cobbles, and ranged in diameter from 1.4m to 1.9m (e.g. 416, FIG. 8.12a; PLATE 8.11). They are similar in form and construction to the



PLATE 8.11 Oven 416, Trench 3; view east

standard cooking ovens regularly found within forts (above 7.5). The fourth example (413) consisted of a large sandstone slab, 1m across, set directly on the subsoil, which showed clear signs of having been affected by heat.

The remains of a further oven (48), approximately in the shape of a figure 8, were noted to the north of the road in Trench 1 (FIG. 8.10). The very fragmentary burnt clay base appeared to sit in a shallow pit (53) filled with ashy material (FIG. 8.13c). Though in simple stratigraphic terms the oven is clearly later than the pit, which may, therefore, relate to Phase 1b, the nature of its fill, which included a few carbonised grains of wheat and barley, implies some association. The pit may represent the accumulation of material raked out from earlier phases of the oven, whose remains were somewhat ephemeral. Immediately to the west was an area of light cobbling and sandstone slabs (49), which may have served as an associated working surface.

A group of subcircular pits at the southern extremity of Trench 3 may also relate to this phase (FIG. 8.11). Pit 446 was 1.6m in diameter, but only 0.38m deep, with a clean gravelly sand fill giving no indication of its function. Pit 430 was also shallow, 0.23m deep and 1.1m in diameter with a slightly more pebbly fill and quantities of pottery and other finds, suggesting that it may have served as a rubbish pit. Pit 428 was 1.3m in diameter and 1m deep with near vertical sides. Partly waterlogged at the bottom, it was very rich in finds (below 8.2.5) including charcoal, calcined animal bone and a small number of cereal grains. Its different layers of fill (FIG. 8.12e) suggest phases of rubbish deposition, though this may not have been its original function. Pit 459 was subcircular, 1.4m in diameter, and 0.85m deep, its lowermost fill partially waterlogged. Its steep, relatively straight-sided lower profile, flat bottom and absence of artefacts, daub or charcoal in its upper fills does not support its interpretation as either a demolition pit or a rubbish pit, though its primary function remains unclear. Finally, only half of pit 427 extended into the trench. Filled with silty sand, it was irregular in profile, 1.75m in diameter and 0.55m deep from the topsoil, and contained some finds, including daub and charcoal. It was presumably a rubbish pit.

A group of pits and shallow depressions in Trench 9 (FIG. 8.15) may also fall into this phase, for they break up the alignment of the structural remains along the edge of the road, though the presence of charcoal and daub in the fill of one pit (1421), 1.5m in diameter and 0.42m deep, may indicate that it was a demolition pit of Phase 1b. The remaining three features, a small oval pit (1429) 1.2m by 0.75m and 0.65m deep at the western end of the trench and two shallow depressions (1440 and 1458), 1m and 2m across respectively but only 0.1m deep, up against its southern edge, produced no finds or other indication of their function.

8.2.2 INTERPRETATION AND ANALOGIES

Phase 1a

Phase 1a seems to have been the longest lived of those in the annexe, since a coin probably dating to A.D. 85 (below 10.1 no. 37) was contained in the make-up (9) of the road of Phase 1b. This first phase of use of the annexe is characterised by processing activities involving fire. On the south side of the road an area of ovens was demarcated by a shallow gully (425) running parallel to the road at a distance of some 18m. At least one of the ovens (496) seems relatively securely identified as for grain drying and others may not unreasonably be so identified. The function of such ovens on rural settlement sites in south-eastern England has been debated in recent years and a reinterpretation of them as malting ovens put forward on the basis of experimental reconstruction work (Reynolds and Langley 1979). Hillman established the criteria for the differentiation of oven function in relation to the nature of the associated charred grain assemblage (1982) and, though there are a number of sites where the associated grain assemblages indicated that the ovens had been used to roast germinated grain for the production of malt, there are rather more examples which confirm the traditional function of these structures as grain driers. Their increased use is seen to be related to the needs of large-scale storage and transport of grain (van der Veen 1989, 315–16). Moreover, in damp

climates in particular the need to dry grain before storage, to prevent germination and discourage the growth of moulds, is undeniable (Hillman 1981, 132–5; Bomford 1988, 304–5), and is well attested in medieval and early modern accounts from Ireland and northern Scotland (e.g. Gailey 1970; Fenton 1978). Indeed, the mix of cereal grains attested at Elginhaugh and the general absence of sprouted grain would seem to favour the interpretation of these structures as drying ovens subject to repeated use (below 11.2.6). A single example of a more conventional cooking oven (473) was also noted (above 8.2.1). On the north side of the road the picture is broadly consistent with that on the south, though none of the processes involved are readily identifiable except in Trench 9, where ironworking is attested.

Evidence of industrial activity, that is processes characterised by pits, ovens and furnaces, is not infrequently attested in the limited investigation of annexe interiors. In the southern annexe of the Antonine fort at Camelon a number of hearths or furnaces for ironworking were located in an area riddled with pits (Goodburn 1976, 300; Frere 1977, 362–3). The numerous pits and wells uncovered in the early excavations within the annexes at Newstead are rightly famous (Curle 1911, 105–15). Though the ritual significance of these pits has been emphasised in more recent analyses, this clearly relates to the end of their functional use (Clarke and Jones 1994, 113–22; S. Clarke 1997). Excavations at the site in the late 1980s/early 1990s indicated industrial activity taking place in part of the south annexe, involving hearths or furnaces, though interpreted by the excavators as civilian in character (Clarke and Jones 1994, 111). A similar picture is also presented by remains uncovered in early excavations outside the fort at Templeborough (May 1922, 55–60). Outside the vexillation fortress at Longthorpe, though apparently not within an enclosed annexe, numerous pottery kilns and associated pits have been identified (Dannell and Wild 1987, 35–57). There are, however, no ready parallels for grain processing being undertaken. Despite the presence of a piece of *lorica segmentata* in the backfill of the grain drier, there is no reason to postulate a legionary garrison at Elginhaugh (below 12.2), though this would not be entirely out of place if legionary troops participated in the collection of grain as tribute.

Phase 1b

The construction of a series of timber buildings on either side of the road marks a major change of function within this area of the annexe. The identification of separate buildings from the fragments uncovered is quite difficult, even in the case of the most extensively excavated example (A) in Trench 3 (FIG. 8.11). In the latter case the remains are all assumed to belong to a single building because the short cross-wall (481) cuts across the line of the passageway between Rooms 1 and 2 and abuts the west wall of the former. It remains possible, however, that Room 2 was in fact a separate building whose south wall was removed by the cutting of the later funnel ditch (420).

Nonetheless, in general the buildings appear to be of the simple rectangular ‘strip’ type which are commonly found in civilian settlements outside forts and in the so-called ‘small towns’, though usually of stone construction (Burnham and Wachter 1990, 18). Contemporary analogies in timber are provided by the first-phase buildings in the *vicus* outside the Flavian fort at Carlisle (McCarthy 1990, 363–4). However, this should not be taken to indicate that the buildings were of specifically civilian form and lead to suggestions that at this stage the annexe became a defended *vicus*, for similar buildings are also known within military establishments. Within the contemporary base at Corbridge, Red House, and the earlier fort at Oberstimm in Raetia, simple rectangular strip-buildings and slightly more elaborate examples with central corridors, both with completely or partly open frontages, have been variously interpreted as hospitals, workshops or store buildings (Hanson *et al.* 1979, 77–81; Schönberger 1978, 57–62, 116–20). Open-fronted store buildings of similar form line the *via principalis* and *via praetoria* in the contemporary legionary fortress at Inchtuthil (Pitts and St Joseph 1985, 179–81, figs 79–83) and, indeed, such *tabernae* are commonly attested in fortresses, though not always identified as store buildings (von Petrikovits 1975, 49–54, 96–7). That it is more difficult to find close analogies for these buildings from within annexes is primarily a reflection

of the lack of investigation of these attached enclosures. However, relatively simple rectangular timber buildings are attested in the first phase of the annexe outside the fort at Carlisle (McCarthy 1991, 9–16). Similar buildings are also known from the excavation in the various annexes at Newstead (Frere 1990, 313; 1991, 230; Keppie 1993, 282–3; Clarke 1994, 79–80), though interpreted by the excavators as civilian (e.g. Clarke 1994 *passim*), while more fragmentary remains were noted in the north annexe at Camelon (McCord and Tait 1978, 156–7).

A storage or workshop function seems to be the most appropriate identification for the examples excavated at Elginhaugh. The location of a stone-lined pit, associated with both metalworking debris and burnt, probably spoilt, grain, in the centre of Room 1 in Building A lends some support to both interpretations, though the frequency with which cereal remains were recovered from demolition deposits generally is quite striking (below 11.2). A similar pit in one annexe building at Carlisle, but lined with timber rather than stone, contained a complete ox skull and has been interpreted as a ritual deposit (McCarthy 1991, 16). The presence of associated storage pits, perhaps for coal and water, outside the buildings is, however, more indicative of some form of industrial activity.

Phase 1c

The third phase of use of this area of the annexe sees a return to activities involving fire. Ovens or kilns were located on both sides of the road, though best attested by the group of four to the south of it (FIG. 8.11). The best-preserved examples in Trench 3 are broadly similar to the cooking ovens excavated in the fort, though slightly smaller. It is not clear why it was deemed necessary to extend cooking activities into the annexe, unless it was a reflection of the pressure for space within the fort, though with a slight reduction in the garrison towards the end of the occupation (below 12.3) the timing seems somewhat belated. Alternatively, the ovens may have served some unspecified industrial purpose, though this does not appear to have involved the working of metals and they do not seem to possess the characteristic features of pottery kilns.

8.2.3 CONSTRUCTION AND RECONSTRUCTION

Phase 1a

The stoke-hole and flues of the grain-drying oven were dug into the subsoil, the flues lined with clay and partly revetted with pieces of sandstone (PLATE 8.8). The absence of any quantity of burnt clay or stonework either deposited in the stoke-hole or evident in the immediate vicinity suggests that these features did not project much above the contemporary ground surface. The oven does not seem to have been enclosed within any substantial structure, but the surrounding stakeholes suggest the provision of some light hurdling at the sides. These would give some protection from the wind, without excluding airflow entirely, and also provide some support for a raised platform of similar material on which sacking might be spread to prevent the grain falling into the drier. Similar arrangements are attested in accounts of medieval and early modern examples of grain driers from Ireland and northern Scotland (e.g. Gailey 1970; Fenton 1978). Any attempts to reconstruct grain-drying ovens are severely hampered by the survival of only sub-floor remains, but even the well known examples from southern England with stone flues probably had superstructures of wattle and daub, given the absence of stone debris in their vicinity, while many were probably free-standing platforms contained within much larger buildings (Morris 1979, 11–12).

Phase 1b

The buildings were mainly of post-trench construction like those within the fort, the construction trenches displaying a similar level of irregularity of line. The width of Room 1 in Building A, for example, varied from 5.9m to 6.4m. The post-trenches were generally 0.35m

wide, though they ranged from 0.2m to 0.5m. Surviving depths varied considerably from non-existent, where they had failed to penetrate the subsoil and were not visible in the upper worm-sorted or plough-disturbed horizons, as for example in the northern half of Trench 2 and perhaps in parts of Trench 9, to 0.4m in Building A (FIG. 8.12f). The irregularity of the bottoms of the trenches precluded their interpretation as beam slots; moreover, several possible post-settings penetrated below the bottom of the slots. Only three post-impressions were identified, all in section, two in Trench 2 and one in Trench 3. These, and the settings noted above, gave only a very imprecise indication of the likely size of the posts (0.1–0.22m) and were not identified in sufficient numbers to suggest a pattern of post spacing.

Separate post-holes were sometimes used at the ends of slots, across the front of buildings or, in some cases, notably in Trenches 1 and perhaps 2, to define internal divisions. Only in one case, in Trench 9, did they appear to define a building (F) (FIG. 8.15). The post-holes were mainly circular and quite small, rarely exceeding 0.6m in diameter and more usually of the order of 0.4–0.5m or less. Some, notably in Building F, were stone-packed. Post-hole depths did not tend to exceed 0.5m, and most were closer to 0.3–0.4m, though in many cases they had been severely truncated by ploughing. In Building F the spacing between posts varied from 2m to 3.5m, the longer dimensions on the long axis at right angles to the road.

It is very difficult to postulate the reconstruction of buildings from such fragmentary remains. Demolition deposits would seem to indicate wall infilling of wattle and daub. The spans of the buildings, of the order of 5–6m, would suggest simple pitched roofs, though a more elaborate arrangement with a double roof may have been provided in Building A if all its components did, indeed, form a single building, which would have been at least 11m, and more probably 14m, wide.

Phase 1c

For the probable construction of the ovens, see above 7.5.3.

8.2.4 STRATIGRAPHY AND PHASING

Although a number of stratigraphic relationships are quite clear and are set out in more detail below, much of the phasing rests on several assumptions. Where specific features have no stratigraphic links to others, as is the case with many of the pits and individual post-holes, they have been phased on the basis of analogy, juxtaposition or general probability. Inevitably, therefore, some will have been incorrectly attributed. In terms of chronology this has only limited repercussions given the very brief occupation span of the site (below 12.1). But even in relation to the interpretation of the function of the annexe, any such minor adjustment would not substantially affect the overall picture.

The occupation of the annexe is divided into two main phases, the first divided into three sub-phases. This approach serves as an aid both to the description of the data and to its analysis, but it should not be assumed that the changes which characterise each sub-phase were necessarily entirely synchronous. Given the variety of activities involved, it seems likely that some of the developments would have been more piecemeal, particularly in relation to the use of pits and oven or kiln structures. Nonetheless, Phase 1 must be divided into at least two subdivisions since in Trench 3 one building (A) and one oven (496) cannot be contemporary (FIGS 8.9 and 8.11; PLATE 8.6). Nor can two distinct forms of oven structure (e.g. 741 and 416, FIG. 8.12a). A minimum of three sub-phases is preferred for a variety of reasons. Firstly, because one oven base (423) in Trench 3 seems unlikely to have been housed within Building A, but on spatial grounds appears to relate to other ovens to the east, two of which cannot be primary. Secondly, pit 459 in Trench 3 cuts the east wall (440) of Building A, but is clearly not a demolition pit, while in turn the central construction slot (424) of Building A overlies the demarcation gully (425) (FIG. 8.11). Finally, a resurfacing of the road (32) and digging of an associated drain (63) in Trench 1 post-dates the demolition of the buildings, but pre-dates the Phase 2 gateway and the associated slots and post-holes outside it to the north (above 8.1.4).

Indeed, a case might even be made for a fourth sub-phase on the basis of the number of times the road was resurfaced.

These phases within the annexe may be linked to those within the fort with greater or lesser degrees of probability. It seems reasonably certain that the primary phase of activity (1a) within the annexe, involving the use of ovens or kilns and associated pits, is contemporary with the building of the fort. Given the *terminus post quem* provided by the coin of A.D. 85 in the road make-up (9) of Phase 1b (above 8.1.2), this primary phase of activity must have continued throughout most of the life of the fort. The construction of strip-buildings within the annexe in Phase 1b may tentatively be linked to the second structural phase within the barracks and their use must have been quite short-lived. Finally the ovens which characterise Phase 1c might reasonably be associated with occupation of the annexe on a temporary basis by troops occupied with the demolition of the fort buildings, since their operation would have been incompatible with the proposed function of the funnel ditches which are associated with the post-demolition reuse of the fort enclosure (above 8.1.4).

Phase 1a

The road through the annexe was clearly a primary feature and directly overlay the old ground surface. During the course of Phase 1a this road was extensively resurfaced. In Trench 3 a second layer of compacted gravel and pebbles (763) up to 0.15m thick was dumped on top of the earlier surface, while in Trench 1 a layer of fine, well-packed gravel (10) up to 0.16m deep had been laid over the earlier surface (133) (FIG. 8.9a and b; PLATE 8.7).

Other clearly primary features include the shallow gully (425) towards the southern limit of the excavated area in Trench 3, the postulated grain-drying oven (496) to the north and post-hole 588, all of which are clearly cut by construction trenches of Building A (FIG. 8.11; PLATE 8.6). Though not directly associated with the grain drier, the group of oven or kiln-like structures at the eastern end of this trench are assumed to be contemporary because they may be similar in function, and in two cases (741 and 751) are earlier than a probable cooking oven (416) of Phase 1c (FIG. 8.12a). Oven 473 is similarly partly sealed by a later example (414).

A number of pits may also be confidently assigned to this primary phase. In Trench 3 pit 494 is cut by the one wall (440) of Building A (FIG. 8.12f), while 582 did not become visible until after the excavation of the stone-lined pit (409) within that building. In Trench 1 a storage pit (65) is sealed by a pit (53), which in turn is overlain by oven 48 of Phase 1c (FIG. 8.13a and c; PLATE 8.2). Other isolated features also appear to be primary, including a small patch of flagstones (66) and adjacent gully or pit (58) to the north of the road in Trench 1, which are sealed by occupation material (47), itself overlain by cobbles and flagstones (49) of Phase 1c (FIG. 8.14a). Both of the latter two complexes of features are awkwardly situated almost on the line of the primary subdivision of the annexe and were presumably located within the entrance gap.

Phase 1b

A second resurfacing of the road was attested in Trenches 1 and 3, similar to the first. A layer of slightly larger stones (9 and 761) up to 0.25m thick, but somewhat less well compacted, sealed the first resurfacing, but survived only towards the sides of the road (FIG. 8.9a and b; PLATE 8.7). Excavation of the make-up layer (9) produced a very slightly worn *aes* of Domitian, probably dating to A.D. 85 (below 10.1, no. 37) providing a *terminus post quem* for this phase. This resurfacing was accompanied by a more general spread of gravel on both sides of the road (12, 18, 408 and 210). Though this surface was cut by a number of the construction trenches and post-holes for the buildings of Phase 1b, this stratigraphic relationship is here assumed to represent no more than phasing within the construction process, with a new surface being provided prior to the erection of the buildings.

All the buildings on both sides of the road are assumed to be contemporary, for in no case do they overlap spatially or, apart from minor repairs (see below), show signs of more than

one phase of construction. As already noted, Building A in Trench 3 cut the postulated grain-drying oven (496), demarcation gully (425), and pit 494, and was in turn cut by the funnel ditch (420) of Phase 2 (FIG. 8.11; PLATE 8.6). Building B cut the gravel spread (12) to the south of the road; Building D/E cut the equivalent spread (210) to the north in Trench 2; while Building C was partly sealed by the layer of heavy cobbling of Phase 2 in Trench 1.

Several of the pits and other features are likely to be contemporary. Two of the pits in Trench 2 (235 and 236) cut the gravel spread (210), which immediately preceded the construction of the buildings (above). In Trench 1 pit 37 cut the equivalent gravel surface (18), while pit 56 cut one occupation layer of Phase 1a (47) and was sealed by cobbling of Phase 1c (49) (FIG. 8.14a; PLATE 8.2). In Trench 3 the stone-lined pit (409) was cut into an occupation layer (411) which sealed the grain-drying oven (496), while several pits and other features in Trenches 2 and 3 contained demolition material in their upper fills, primarily in the form of burnt daub, indicating that they went out of use when the buildings were demolished.

There were slight signs of repairs or alterations to some of the buildings. The best evidence comes from Building A in Trench 3. One post-hole (590) cut the construction trench of its main east wall (440) and a stakehole abutted the same wall some 3m to the south (FIG. 8.11). A localised thickening of the construction trench on the west side of the passageway between Rooms 1 and 2 indicates replacement of a larger section of walling there. Another large post-hole or pit (531) cut the northern end of the east wall of that passageway. Some 0.9m in diameter and of equal depth, it had straight sides and a flat bottom more suggestive of a structural feature than a pit, though it showed no sign of a post-impression. Other separate large, but shallow, post-holes (572 and 599) on either side of the east wall (424) of the passageway suggest that further repairs were necessary in that area. Two adjacent post-holes just outside the main east wall (440) may also relate to repairs. The smaller (503) was stone-packed, the larger (513) contained two separate post-impressions 0.12m and 0.15m in diameter respectively. Finally, a post-hole (109) at the northern end of the limited remains of Building B (FIG. 8.10) may also indicate a repair, for it cut the primary wall trench.

There was clear evidence that the buildings had been demolished and their remains burnt. A spread of demolition material (21), consisting of burnt daub and charcoal overlay the Phase 1b road surface (9) in the south-east corner of Trench 1, while a thin layer of charcoal was noted in the upper fill of part of the front wall slot (239) of Building D on the other side of the road. Demolition material in the form of charcoal and burnt daub was recovered from the roadside drain (405) and a possible repair post-hole (531) in Trench 3; the primary demarcation gully (138) in Trench 1; and from the upper fills of several pits (235 and 240 in Trench 2; 501 and 547 in Trench 3) (FIGS 8.12c and d; 8.13d). Furthermore, two pits in Trench 3 (401, 426) may have been dug as part of the demolition process since both contain primarily demolition material in their fills. Pit 401 was oval, some 1.7m by 1.1m and 0.4m deep. It appears to have had material burnt within it causing some reddening of the sides and resulting in the deposition of quantities of ash. Pit 426, which contained quantities of charcoal and daub, was subrectangular, measuring 1.15m by 0.9m, but only 0.23m deep and cut one of the construction trenches of Building A (FIG. 8.11).

Phase 1c

A further resurfacing of the road evident in Trench 1 (32) sealed the building demolition layer (21), while in Trench 3 a gravel surface (474) extended over the infilled roadside drainage gully (405) (FIG. 8.12g). Several of the ovens are clearly secondary and are unlikely to be contemporary with the buildings. In Trench 1 oven 48 sealed pit 53, which in turn sealed pit 65 of Phase 1a, and an adjacent flagged and cobbled surface (49) sealed pit 56 of Phase 1b (FIGS 8.13a and c, and 8.14a; PLATE 8.2). Though these features were apparently situated in line with the primary dividing gully (138), it may have been out of use by the time the oven (48) was in operation. At the east end of Trench 3 oven 414 partly overlay a Phase 1a oven 473 (FIG. 8.11), while oven 416 sealed the flues of two oven or kiln-like structures (741 and 751) (FIG. 8.12a). Pit 459 cut the east wall of Building A and the earlier demarcation gully (425). Finally, in

Trench 9 pit 1421 cut building slot 1427 (FIG. 8.15) and in Trench 3 pit 430 cut primary gully 425 (FIG. 8.11).

Phase 2

See 8.1.4. above.

8.2.5 ASSOCIATED FINDS

Phase 1a

Road and associated features

- 4 and 117, contemporary ground surface, Trench 1: some 30 sherds of coarse pottery, including types 58, 62, 109, 121 and 166, 1 sherd of samian, 1 sherd of mortarium, 4 sherds of amphora, 1 piece of bottle glass, 1 nail, 4 pieces of animal bone, cattle tooth, 1 piece of flint, 1 sherd of prehistoric pottery, daub, charcoal
- 10, second resurfacing of road: 1 sherd of coarse pottery, 3 sherds of samian, including 1 decorated (D71)
- 220, 221 and 225 contemporary ground surface, Trench 2: copper-alloy sheet (no. 99), 12 sherds of coarse pottery, 5 sherds of amphora, 2 sherds of samian, 1 sherd of mortarium, 1 fragment of bottle glass, fragment of lava quern, cattle teeth

Ovens

- 414, cooking oven, Trench 3: animal bone, charcoal
- 404, 437, 438, fill of oven 403, Trench 3: 15 sherds of coarse pottery, including type 58, 1 sherd of decorated samian (D59), fish bone, cattle tooth, numerous fragments of burnt animal bone, daub, charcoal
- 472, material raked out from oven 473, Trench 3: charcoal, some carbonised seeds including cereals
- 496 and 498, grain-drying oven, Trench 3: fragment of *lorica segmentata* (no. 167), unidentified iron, 1 fragment of bottle glass, numerous fragments of animal bone, mainly burnt, small quantities of carbonised wheat, barley and oats
- 519 and 520, fills of flues in oven 496 Trench 3: charcoal, a few carbonised seeds
- 742 and 768, fills of oven 741, Trench 3: several fragments of burnt animal bone
- 744, fill of oven flue 743, Trench 3: limited amounts of carbonised cereals

Pits

- 211, lower fill of pit 248, Trench 2: some 20 sherds of coarse pottery, including types 18, 45, 47, 61 and 180, almost complete mortarium and 1 other sherd, 6 sherds of amphora, 4 nails, numerous fragments of animal bone including sheep/goat, mainly burnt, and cattle teeth, 1 sherd of Iron Age pottery
- 223, fill of pit 243: 2 sherds of coarse pottery, types 110 and 119
- 447, upper fill of pit 446 in Trench 3: 1 sherd of coarse pottery
- 495, upper fill of pit 494, Trench 3: 1 sherd of coarse pottery, 1 sherd of decorated samian (D39) from the same vessel as in gravel spread 408 and pit 501, 1 piece of bottle glass, 2 nails, charcoal, daub
- 508, lower fill of pit 494, Trench 3: 2 nails
- 1402 and 1406, upper fills of pit 1401, Trench 9: 4 sherds of coarse pottery, 1 sherd of amphora, 1 nail, 1 piece of possible iron slag
- 1404, upper fill of pit 1403, Trench 9: 7 sherds of coarse pottery, including type 123, 1 piece of bottle glass, 1 fragment of unidentifiable iron, 1 nail, several fragments of animal bone, mainly burnt, including pit and sheep/goat
- 1405, fill of depression/pit 1407, Trench 9: iron T-bar (no. 194), two crossed iron rods (no. 195), 1 sherd of amphora, several nails and pieces of unidentifiable iron, small spherical metallic droplets
- 1411, lower fill of pit 1403, Trench 9: 3 sherds of coarse pottery, 8 sherds of samian, including 1 decorated (D77), 2 sherds of amphora
- 1417 and 1418, lower fills of pit 1415, Trench 9: daub, nail
- 1420, upper fill of pit 1419, Trench 9: 2 sherds of coarse pottery, 1 sherd of possible beaker pottery

- 1426, lower fill of pit 1419, Trench 9: 1 sherd of coarse pottery, 1 sherd of decorated samian (D78), several sherds of possible beaker pottery
- 1432, upper fill of pit 1431, Trench 9: 3 sherds of coarse pottery, including types 127 and 138
- 1434, upper fill of pit 1433, Trench 9: mason's wedge (no. 143)
- 1435 and 1443, middle fills of pit 1433, Trench 9: copper-alloy rod (no. 101), unidentifiable copper alloy, 2 sherds of coarse pottery, 1 sherd of amphora, numerous small fragments of animal bone, 1 piece of slag, iron concretion, charcoal, coal
- 1442, lower fill of pit 1433, Trench 9: several fragments of burnt animal bone, including sheep/goat

Miscellaneous features

- 434, fill of gully 425 demarcating area of ovens, Trench 3: 1 sherd of samian

Phase 1b

Road and associated features

- 9, make up of road: 1 *as* of Domitian (no. 37), iron crowbar (no. 131), nail
- 12, 18 and 91, gravel spreads south and north of road, Trench 1: some 20 sherds of coarse pottery, including types 58, 76, 80 and 140, over 30 sherds of amphora, 2 sherds of samian, including 1 decorated (D52), 1 sherd of mortarium, 1 piece of bottle glass, 2 nails, daub, charcoal
- 47, general occupation layer north of road, Trench 1: 11 sherds of coarse pottery, including type 95, 2 nails, 1 piece of animal bone
- 210, gravel spread north of road, Trench 2: 8 sherds of coarse pottery, including types 103 and 116, 2 sherds of amphora, 1 hobnail
- 406 and 479, fills of gully 405, Trench 3: 1 *sestertius* of Vespasian (no. 16), 1 *dupondius* of Vespasian (no. 19), copper-alloy saucepan handle (no. 70), unidentifiable copper alloy, iron oval plate (no. 199), long iron spike (no. 217), some 20 sherds of coarse pottery, including types 71, 76, 114 and 133, 1 sherd of amphora, 3 sherds of mortarium, including one stamped (no. 13), 2 sherds of samian, including 2 decorated (D37 and D38), 1 rim fragment of pillar-moulded glass bowl, 13 nails, cattle tooth, several fragments of burnt animal bone, including pig, daub, charcoal, quantities of carbonised oats, wheat and barley
- 407 and 408, gravel spread south of road, Trench 3: 1 sherd of coarse pottery, 3 sherds of amphora, 1 sherd of decorated samian (D39) from the same vessel as found in pits 501 and 494, 2 pieces of bottle glass, 1 oyster shell

Buildings

- 22, 29, 82, 203, 204 and 205, fills of construction trenches, Building D/E: 20 sherds of coarse pottery, including types 66, 118 and 178, several sherds of amphora, 1 sherd of decorated samian (D72), 5 fragments of glass (bottle and jug), 1 piece of glass bangle, iron strip (no. 196), 1 flint
- 127, fill of post-hole 126, Building C: lead sheet (no. 230), 4 fragments of burnt animal bone, cattle tooth
- 135, fill of pit 134, Building B: 2 sherds of coarse pottery, type 58, numerous fragments of animal bone, including cattle, and cattle teeth
- 215, fill of post-holes 258: 3 sherds of amphora
- 217 and 218, fills of post-holes, Building D: 3 sherds of amphora, 1 nail, cattle teeth
- 219, fill of post-hole 260, Trench 2: 2 sherds of coarse pottery, 2 sherds of amphora
- 224, fill of construction trench 249, Building E: 2 sherds of coarse pottery, 1 piece of burnt animal bone, daub
- 435, 441 and 511, fills of construction trenches, Building A: 1 *as* of Nero (no. 8), copper-alloy rod (no. 94), 3 sherds of coarse pottery, 1 fragment of bottle glass, 3 nails, 3 fragments of burnt animal bone
- 514, fill of repair post-hole 513, Building A: double-spiked iron loop (no. 159), 6 fragments of burnt animal bone
- 532 and 533, fills of possible repair post-hole 531, Building A: 2 sherds of coarse pottery, 1 sherd of samian, 3 nails, numerous fragments of burnt animal bone, charcoal, daub
- 567, fill of post-hole 566, Trench 3: 2 fragments of burnt animal bone
- 1445, fill of post-hole 1444, Building F: 1 sherd of mortarium
- 1453, fill of post-hole 1452, Building F: 3 sherds of amphora

Pits

- 37, pit, Trench 1: 1 sherd of undecorated samian, 5 sherds of coarse pottery, 1 sherd of amphora, 1 piece of glass, 1 nail
- 55, fill of pit 56, Trench 1: 2 sherds of amphora, 2 sherds of mortarium, cattle teeth
- 201, fill of pit 235: unidentifiable copper alloy, over 15 sherds of coarse pottery, 1 sherd of amphora, 2 iron, 1 fragment of animal tooth
- 202 and 229, upper fills of pit 236, Trench 2: copper-alloy hook (no. 73), over 20 sherds of coarse pottery, including types 55, 61, 64 and 162, 2 sherds of mortarium, 1 sherd of samian, 2 pieces of bottle glass, 2 nails, cattle teeth and several fragments of burnt animal bone, charcoal, some carbonised seeds including cereals
- 206, upper fill of pit 240, Trench 2: over 20 sherds of coarse pottery, including type 48, 1 sherd of amphora, 4 fragments of glass bottles, 3 nails, fragment of lava quern, burnt animal bone, carbonised cereals (emmer, spelt, barley and oats) and weeds of cultivation
- 231, primary fill of pit 240 in Trench 2: copper-alloy plate brooch with a silver sheet (no. 10), copper-alloy bracelet (no. 160), over 75 sherds of coarse pottery, including types 58, 62, 63, 64 and 136, 6 sherds of samian, including 1 stamp (S11), 1 fragment of glass bottle, 2 nails, numerous fragments of burnt animal bone, including cattle teeth, daub, charcoal, a few carbonised seeds including cereals
- 234, lower fill of pit 236, Trench 2: 1 sherd of samian, 1 fragment of glass beaker, 1 nail, a few carbonised seed including cereals
- 264, fill of pit 265, Trench 2: 1 fragment of bottle glass
- 402 and 418, fills of demolition pit 401, Trench 3: iron ring or hook (no. 202), 1 nail, charcoal, daub, some carbonised seeds including cereals
- 410, fill of pit 409, Trench 3: several fragments of lava quern, possible copper-alloy metalworking debris, 1 nail, charcoal, large quantities of carbonised emmer and spelt wheat and lesser quantities of barley
- 429, fill of demolition pit 426, Trench 3: fragment of lava quern, several fragments of burnt animal bone, daub, much charcoal
- 502, upper fill of pit 501, Trench 3: numerous fragments of animal bone, mainly burnt, including sheep/goat and pig, 1 nail
- 506, middle fill of pit 501, Trench 3: 1 sherd of coarse pottery, 2 sherds of samian, including 1 decorated (D39) from the same vessel as in gravel spread 408 and pit 494, coal, 9 fragments of burnt animal bone
- 512, lower fill of pit 501, Trench 3: 1 nail
- 548, 726, 729 and 737 upper fills of pit 547, Trench 3: 3 sherds of coarse pottery, 3 sherds of amphora, 1 nail, pieces of vitrified stone, numerous fragments of burnt animal bone, including sheep/ goat, several tooth fragments, including cattle, daub, charcoal/burnt wood fragments, quantities of carbonised wheat, including chaff, and barley
- 740 and 747, lower fills of pit 547, Trench 3: charcoal

Miscellaneous features

- 21, demolition layer, Trench 1: iron bar (no. 212), 15 sherds of coarse pottery, including types 34, 41, 88 and 109, 2 nails, 1 sherd of mortarium, numerous fragments of animal bone, daub, charcoal
- 475 and 489, occupation layers, Trench 3: *as* of Vespasian (no. 31), fragment of a copper-alloy vessel (no. 65), iron strip (no. 215), 2 sherds of coarse pottery, 2 sherds of samian, including 1 decorated (D65), 2 pieces of glass bottles, 1 fragment of lava quernstone, 2 sherds of Iron Age pottery, 1 sherd of other prehistoric pottery, several fragments of animal bone, mainly burnt, including cattle. 2 pieces of flint, charcoal
- 509, burnt layer across Building A: large quantities of carbonised wheat (emmer, spelt and bread wheat) and barley

Phase 1c*Road and associated features*

- 5, cobbling north of road, Trench 1: 2 sherds of coarse pottery
- 63, gully north of road, Trench 1: several sherds of coarse pottery
- 411, general occupation layer, Trench 3: 1 *as* of Vespasian (no. 21), iron wire with a looped end (no.

187), small iron ring (no. 188), over 20 sherds of coarse pottery, including type 61, 2 sherds of samian, 1 sherd of mortarium, several sherds of amphora, 5 fragments of glass (bowls, bottles, a jug and a flask), 5 lava quern fragments, 9 nails, 1 fragment of burnt animal bone, daub

Pits

- 45, fill of pit 53, Trench 1: 20 sherds of coarse pottery, including types 123 and 138, 1 sherd of mortarium, 1 sherd of decorated samian (D53), 1 sherd of amphora, 1 piece of glass, 2 nails, 3 pieces of animal bone, daub, charcoal, cinder, some carbonised seeds including cereals
- 431, fill of pit 430 Trench 3: 20 sherds of coarse pottery, including type 40, 4 sherds of samian, including 2 stamps (S12 and S13) and a further decorated sherd (D41), rectangular iron plate (no. 213), 3 nails, 1 piece of burnt animal bone
- 432, upper fill of pit 428 Trench 3: over 25 sherds of coarse pottery, including type 114, 1 sherd of mortarium, 2 sherds of samian, 1 fragment of bottle glass, numerous fragments of burnt animal bone, daub, a few carbonised seeds including some cereals
- 433, fill of pit 427, Trench 3: 2 sherds of coarse pottery, including type 35, 3 sherds of samian, including 2 decorated (D43–4), 4 sherds of amphora, 1 fragment of heat-distorted glass, 1 nail, 6 pieces of burnt animal bone, including skull fragments, charcoal
- 447, upper fill of pit 446, Trench 3: 1 sherd of coarse pottery
- 460, upper fill of pit 459, Trench 3: 1 nail
- 463 and 464, middle fills of pit 428, Trench 3: 17 sherds of coarse pottery, including types 54 and 63, 8 sherds of amphora, 4 sherds of mortarium, 2 fragments of glass (jug and bottle), 1 nail, numerous fragments of mainly burnt animal bone, including sheep/goat, daub, charcoal
- 466, basal fill of pit 459, Trench 3: 3 sherds of coarse pottery including types 34 and 147, 1 sherd of decorated samian (D83), 2 pieces of bottle glass, 1 piece of burnt sheep/goat bone and fragments of cattle tooth, daub, a few carbonised seeds
- 467, 468 and 469, basal fills of pit 428 Trench 3: 2 sherds of coarse pottery types 54 and 63, 2 sherds of decorated samian (D45 and D64), 2 pieces of bottle glass, 3 fragments of burnt animal bone, charcoal
- 1423, fill of pit 1421, Trench 9: daub, charcoal

Ovens

- 48, oven, Trench 1: 2 sherds of mortarium, 2 nails, several fragments of animal bone, mainly burnt, cattle tooth
- 413, cooking oven, Trench 3: 2 pieces of burnt animal bone
- 414, cooking oven, Trench 3: 4 fragments of burnt animal bone, charcoal

8.3 OTHER INTERNAL FEATURES

8.3.1 DESCRIPTION

Two areas were investigated towards the middle of the inner part of the annexe in an attempt to determine something of the nature of the occupation away from the main focus of activity along the road. Both trenches (7 and 8) were located north of the road, the former also positioned to check the relationship between the funnel ditch (247) and the ditches of the fort (FIG. 12.4). A third trench (6), intended to establish the relationship between the annexe and the defences of the fort (above 8.1), further added to the internal area examined. As a result some 885m² within the interior of the annexe was excavated, in addition to the areas alongside the road already described (above 8.2).

Phase 1

The only substantive feature exposed was a rectangular building (G) in Trench 7, aligned east–west parallel to the road (FIG. 8.17). Assuming that the south wall continued in a straight line and the post-hole at the west end represents a continuation of the north wall, the building was at least 14.3m long and 3.5 to 4m wide. It was divided into three rooms, which measured internally 3.4m square, 3.25m by 5.8m, and 3.7m by at least 4.4m.

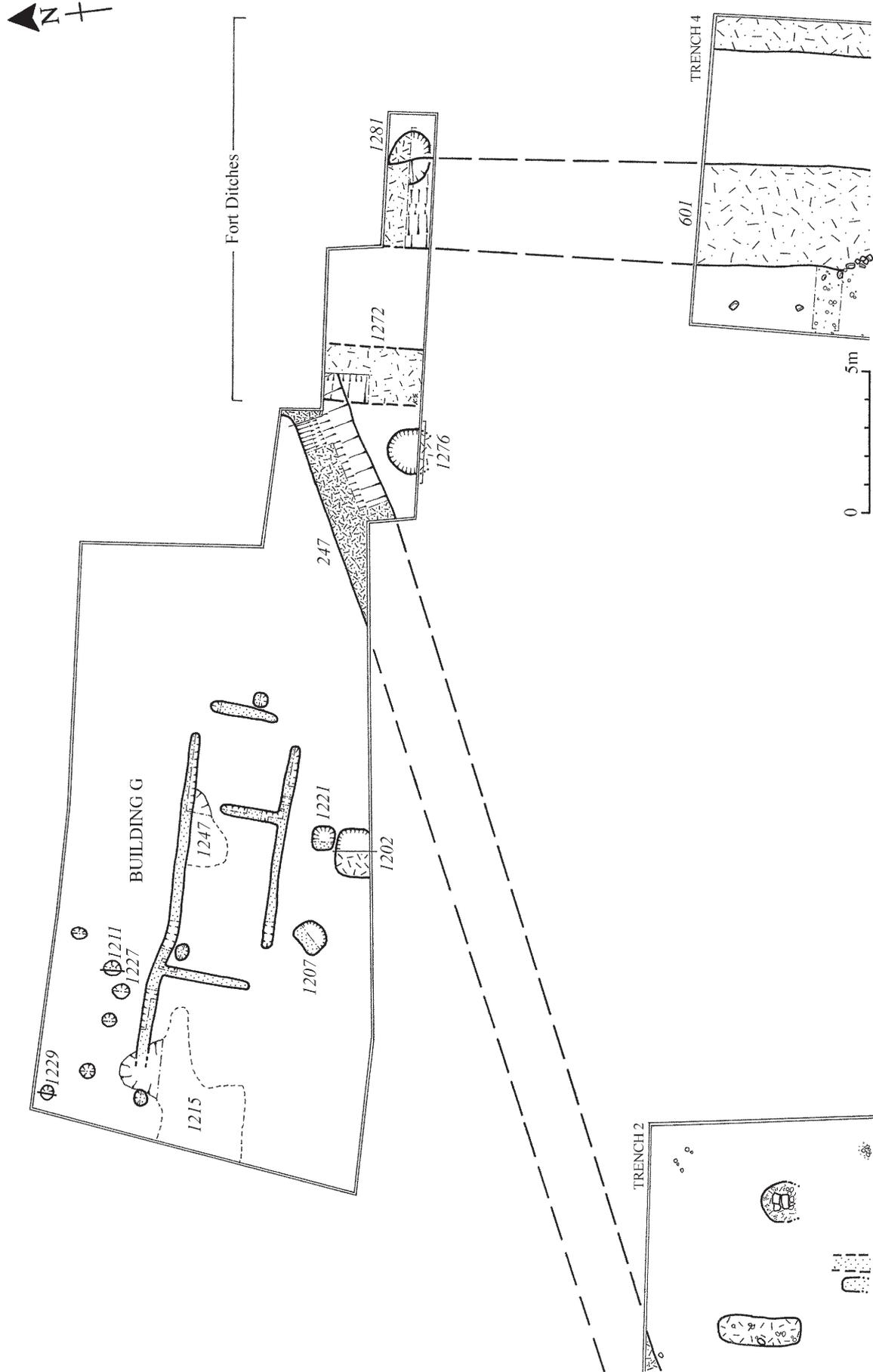


FIG. 8.17 Plan of Trench 7

Three subrectangular pits immediately to the south of the building are likely to be associated. The largest example (1202), 1.6m across and 0.6m deep, had vertical sides and a flat bottom (FIG. 8.19d) perhaps indicative of some storage function, though it was subsequently used as a demolition pit (below 8.3.4). Pit 1207 to the west was very similar, though it was only 1m across and 0.43m deep, and contained rubbish rather than demolition material in its upper fill. However, pit 1221 some 3m to the east was 0.9m across and 0.43m deep with a bowl-shaped profile and gave no indication of being other than a rubbish pit.

Two circular pits (1281 and 1276) at the eastern end of Trench 7, both some 1.5m in diameter and 0.6–0.7m deep, also appear to be primary. Both were steep-sided and flat-bottomed (e.g. 1276, FIG. 8.19c) suggesting a primary use other than for rubbish, though this had clearly been the eventual fate of 1276, whose primary fill also included quantities of charcoal and some daub perhaps from the demolition of the nearby building.

No recognisable structures were revealed in either Trench 6 or 8 in the northern part of the annexe. A semicircular, shallow V-shaped gully (1603) at the eastern end of Trench 8 (FIG. 8.18), 0.3–0.4m wide and 0.12m deep, seems more likely to be a drainage feature than the foundation trench for a wall (FIG. 8.19b), its Roman date confirmed by the presence of two sherds of pottery within its fill. An irregular gully (1624) at the eastern end of the same trench may be similarly interpreted. Several small post-holes in the western half of the trench, which seem to form two parallel rows (1611 and 1613, and 1618, 1620, 1622 and 1627) some 8m apart running approximately east–west, are likely to represent fence or picket lines (FIG. 8.18), the presence of a rim fragment of glass in one confirming their Roman date. The 3.5–4m spacing between the posts along the lines, the width of the span involved, the absence of intermediate posts across it and the relatively small size of the post-holes (0.25–0.5m in diameter), all militate against any suggestion that they formed elements of a building.

However, the presence of quantities of daub in the primary fill of a nearby pit (1609) suggests that there were structures in the immediate vicinity. Its irregular profile and fill (FIG. 8.19a) indicated that it was a rubbish or demolition pit. A shallow scoop (1616) nearby, 0.9m in diameter and 0.14m deep, contained no diagnostic finds and was of uncertain function. A second small pit (1607) only 0.3m deep at the eastern end of the trench contained flecks of charcoal and some pottery, but no daub, and was presumably a rubbish pit. Burning was also attested by an amorphous spread of charcoal (1606) adjacent to post-hole 1611, though there was no sign in the surrounding soil of any heat penetration. Two areas of burning were the only internal features in Trench 6, though neither produced any associated Roman artefactual

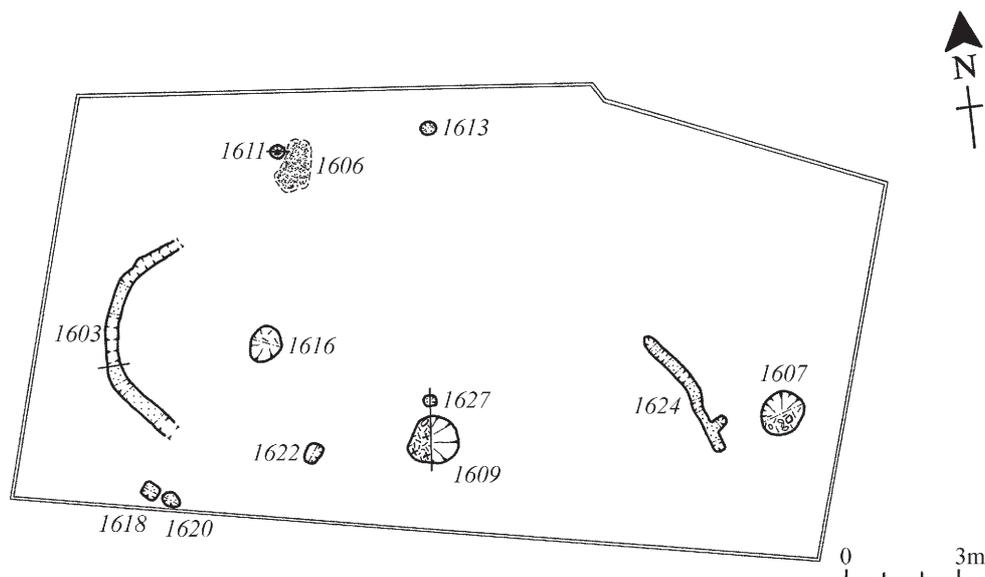


FIG. 8.18 Plan of Trench 8

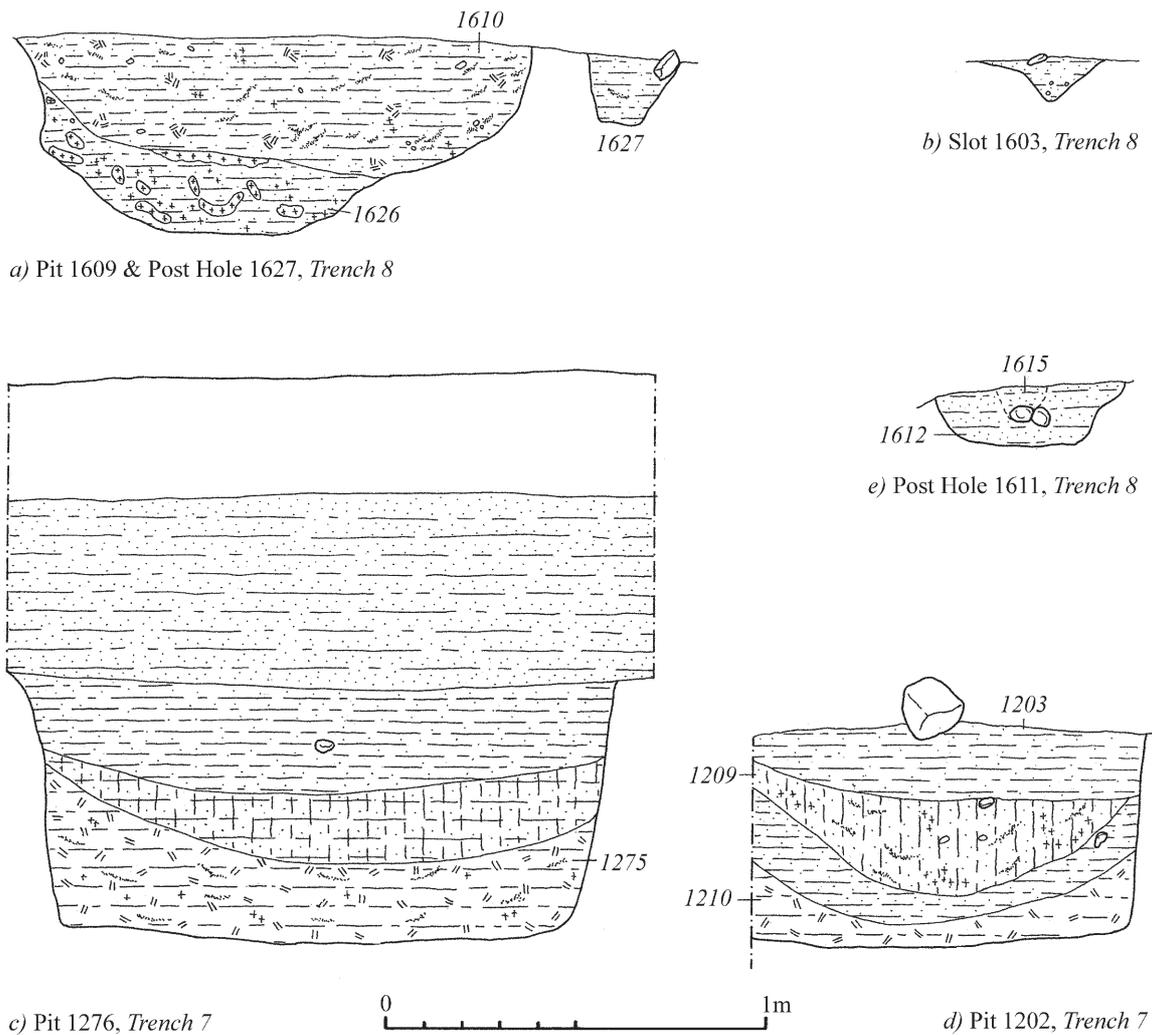


FIG. 8.19 Sections through other internal features: a. pit 1609 and post-hole 1627; b. slot 1603 (both Trench 8); c. pit 1276; d. pit 1202 (both Trench 7)

material (FIG. 8.2). An amorphous patch of daub and charcoal (1004) was reminiscent of demolition spreads within the fort, though there were no structures nearby from which it might have been derived. An adjacent shallow depression (1001) *c.* 1m in diameter lined with clay reddened by heat contained some charcoal and may have been some form of working area involving relatively low temperatures.

Phase 2

The funnel ditch (247) of Phase 2 cut across the northern part of the annexe, its line being picked up at the eastern end of Trench 7 where it intersected with the outer ditch of the fort (1272) (FIG. 8.17, above 8.1). No other features are attributed to Phase 2 in the areas examined.

8.3.2 INTERPRETATION AND ANALOGIES

The intensity of occupation within the northern part of the annexe was far less than along the road line. All belonged to Phase 1. The one certain building attested (G, FIG. 8.17) was also somewhat different in character to those by the road. It was much narrower, subdivided into small rooms and aligned at right-angles to the other annexe buildings. There was no indication of its function, but the adjacent external pits seem likely to have had a storage function and the

rooms are more reminiscent of offices than workshops. A slightly shorter but similarly narrow and even more frequently subdivided building in the annexe at Carlisle was interpreted as an ancillary structure to an adjacent, but only partially exposed, office and store for animal fodder (McCarthy 1991, 15–16).

The widely spaced lines of post-holes (FIG. 8.18) may have supported a rail fence or individual uprights. In either case they may reasonably be interpreted as linked to the control of horses, either by corralling them or more likely providing picket lines. Similarly widely spaced posts within the *vallum* some 400m to the east of the Hadrianic fort at Stanwix were identified as supports for a high post-and-rail fence for precisely this purpose (Smith 1979, 27–30, 37). The provision of drainage gullies in such an area would not be inappropriate.

Though pits and areas of activity involving fire are attested, their frequency too is far less than alongside the road. Moreover, most of the burning attested seems to relate to hearths or the deposition of demolition material, so that it is unlikely that the area witnessed any substantial industrial activity.

8.3.3 CONSTRUCTION AND RECONSTRUCTION

The construction trenches of the buildings varied in width from 0.27m to 0.5m, were irregular in their line and discontinuous. Thus, post-trench construction is likely to have been employed in Building G (cf. Hanson 1982, 171), despite the fact that the slots were extremely shallow, not exceeding 0.1m in depth. They had presumably been truncated by ploughing, which could also explain the failure to detect the full extent of the south wall. No post-impressions were recorded, but the use of wattle and daub in the walling is attested by the presence of burnt daub and charcoal in an adjacent pit (1202).

The two rows of post-holes in Trench 8 (1611, 1613, 1618, 1620, 1622 and 1627, FIG. 8.18) have been interpreted as a fence or a picket line. Accordingly, they will have supported quite widely-spaced upright posts, perhaps connected by rails. The post-holes varied in diameter from 0.25m to 0.5m and in depth from 0.18m to 0.25m (e.g. FIG 8.19a). Only one (1611) contained a post-impression, noted in section (FIG. 8.19e), which was 0.13m in diameter.

8.3.4 STRATIGRAPHY AND PHASING

The level of activity attested was much less than in the trenches alongside the road and there was little evidence of stratigraphic relationships. Accordingly no attempt has been made to subdivide those phases of use which were contemporary with the occupation of the fort. However, two significant relationships were established. The north wall of Building G cuts across two adjacent large, shallow and amorphous pits (FIG. 8.17). The first (1247) measured some 3.5m by 1.5m across, while the second (1215), which extended beyond the western limit of the trench, was even larger. Both must have been open prior to construction of Building G, since they contain Roman pottery. They are best interpreted as tree holes, indicating that some clearance of the site was necessary, though the accumulation of pottery and the occurrence of sherds from the same vessel in later contexts elsewhere in the annexe suggests that, as in the area immediately adjacent to the road, Building G does not represent the primary phase of activity in the area. In addition, pit 1281 was clearly earlier than one of the outer fort ditches (601) on the north side of the road (above 7.1), suggesting that the first phase of activity in the annexe preceded the completion of the fort.

There were hints of possible repairs to Building G (FIG. 8.17). Two post-holes, one outside the eastern end wall and one in the north-west corner of the middle room, lie right up against the construction trenches and may have provided additional support to the structure at these points. It may not be coincidence that the latter was provided at a point where the outer wall deviated from a straight alignment and perhaps introduced an element of instability. Both post-holes were large, 0.65m and 0.8m in diameter respectively, though, as with all structural remains in Trench 7, very shallow, not exceeding 0.16m in depth.

The heavy concentration of burnt daub and charcoal in the upper filling of an adjacent pit

(1202) (FIG. 8.19d) indicated that the building had been demolished, the wattle infill panels burnt and the remains deposited in a pre-existing pit.

8.3.5 ASSOCIATED FINDS

Phase 1

Trench 6

1004, burnt spread: charcoal
1002, fill of pit 1001: charcoal

Trench 7

1205, tree hole to the north of Building G: 1 sherd of samian
1208, upper fill of pit 1207: *as* of Nero (no. 7), 11 sherds of coarse pottery including type 180, several sherds of amphora, numerous fragments of burnt animal bone, charcoal
1210, primary fill of pit 1202: Flavian *as* (no. 53), 2 sherds of decorated samian from the same vessel (D48) as in the upper fill, 1 fragment of bottle glass
1203 and 1209, upper demolition fills of pit 1202: 5 pieces of bottle glass, some 20 sherds of coarse pottery, including type 181, 1 sherd of decorated samian (D48), charcoal, some carbonised seeds including cereals
1216, fill of tree-hole 1215 beneath Building G: 1 unidentifiable iron object, 9 sherds of coarse pottery, 2 sherds of samian, including 1 decorated (D68), 1 sherd of mortarium, 2 pieces of burnt bone, including pig
1222, fill of pit 1221: 3 sherds of coarse pottery, 1 sherd of amphora, 1 piece of bottle glass, lava quern fragment
1248, fill of tree-hole 1247 beneath Building G: 2 sherds of coarse pottery, 1 sherd of decorated samian (D49). Sherds from the same vessel were found in the outer fort ditch nearby (1272) and in dividing gully (138)
1275, basal fill of pit 1276: stamped mortarium, much charcoal, a little daub, a few carbonised seeds including cereals
1282, fill of pit 1281: 1 melon bead, 3 sherds of amphora

Trench 8

1604, fill of gully 1603: 2 sherds of coarse pottery, including type 120
1606, burnt spread: charcoal
1608, fill of pit 1607: 1 sherd of coarse pottery, type 123, 1 sherd of decorated samian (D76)
1610 and 1626, fills of pit 1609: 1 sherd of mortarium, quantities of daub, charcoal
1614, fill of fence post-hole 1613: rim fragment of glass bottle

CHAPTER 9

THE BATHHOUSE

By G.S. Maxwell

9.1 DESCRIPTION AND CONSTRUCTION

The bathhouse at Elginhaugh came to light in the course of routine aerial reconnaissance of the Lothians, mounted by the Royal Commission on the Ancient and Historical Monuments of Scotland in July 1984, five years after the initial discovery of the fort. The parchmarks betraying its presence, in pasture about 50m to the south of the fort, were first noticed to starboard of the survey aircraft by the pilot, Mr Donald Stark, while the attention of the Commission observer and photographer was concentrated on the traces of the fort itself on the port beam. Seen from the air (PLATE 1.3), the structure appeared to be the buried foundations of a rectangular building measuring approximately 20m by 8m overall; cross-walls divided it into three rooms, and what seemed to be an apsidal projection could be made out at one end. The structure's proximity to the fort and the apparent presence of an apse made its identification as a bathhouse almost irresistible.

Nevertheless, because the aerial recognition of extramural stone-built structures in Roman Scotland is comparatively rare (the requisite climatic conditions being infrequent and the potential targets few), it was thought desirable that the new discovery should be confirmed on the ground. Consequently, in the early winter of 1984, after a preliminary site-evaluation based on the interpretation of the air photography, a brief trial-excavation was undertaken, which produced the following results, hitherto published in only summary form (Maxwell and Wilson 1987, 18).

Identifying the site on the ground presented unexpected difficulty, for the clarity with which the remains had been recognised from the air was deceptive, for they lie on what seems at first sight totally unsuitable, steeply-sloping ground some 20m below the level of the fort and 10m above the flood-plain of the River North Esk. Fortunately, the withered remains of a distinctive pattern of nettle-clumps that had been recorded on the summer's photographs led the eye to the feature in question – an almost imperceptible shelf, aligned along the contour for the appropriate length and width, across which the fall of ground was about half that of the one-in-three gradient elsewhere on the slope.

The main object of the investigation being to confirm the location, character, and dimensions of the structure, together with its state of preservation, the excavation was restricted to an interrupted cross-section from north to south near the western end (where it was suspected that the hypocausted *caldarium* might lie), a short trench across the adjacent end wall, and another towards the eastern end of the north wall; geophysical assay not then being available, a light metal probe was also used to locate the eastern end wall and the internal partition walls. (For convenience of reference, the following account assumes that the long axis of the structure is aligned from east to west.)

The building thus examined (FIG. 9.1, plan) was found to measure about 19.2m by 7.5m (excluding the 'apsidal' projection at the western end) over neatly-coursed, clay-mortared walls that rarely exceeded 0.6m in thickness; the partition walls appear to have been slightly narrower. The existence of the 'apse' could not be substantiated, though such evidence as was recovered suggested that it was of rectangular shape, extending about 1.2m beyond the western

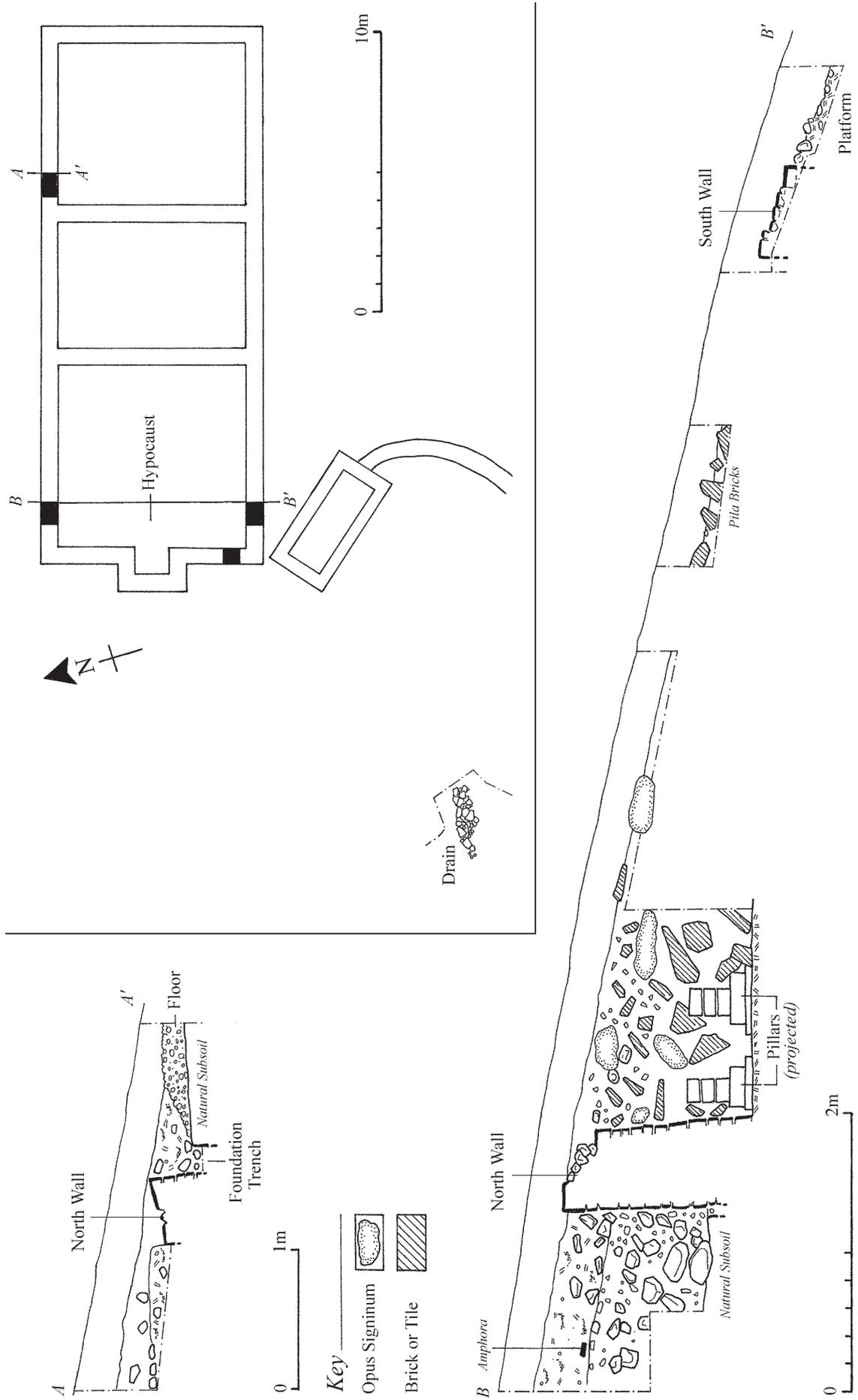


FIG. 9.1 Bathhouse plan and sections

end wall over a length of 2.5m. The south-eastern quarter of the building appeared to be poorly preserved, the southern half of the east wall and the eastern half of the south wall affording no response to either trial-trenching or probing – a confirmation of the negative evidence of the air photographs.

It was, therefore, fortunate that it had been decided to draw the main section (B–B) across the building from a point near the north-west corner, where the inner face of the north wall stood to a height of over 1.1m in eleven courses and the outer even higher (FIG. 9.1, section B–B; PLATE 9.1). Immediately outside the building, the Roman ground level was covered by a mass of tumbled rubble 0.75m thick, while this in turn was overlain by a spread consisting mainly of smaller stones, burned debris, and fractured tile or brick (but also containing scattered flakes and crumbs of amphora and coarse pottery), which, like the first, had accumulated against the outer wall-face; both here and in section A–A, some 12m to the east, stone-robbing had cut into this upper layer.

The accumulation of debris in the interior of the building in section B–B, however, was found to be strikingly different. As far as could be distinguished, it represented a single deposit, as much as 1.2m deep, comprising lumps of mortar with brick or tile inclusions, *opus signinum*, large fragments of various sizes and types of bricks and tiles, and a relatively small number of medium-sized stones, that might have derived from an adjacent wall-face. Apart from the walls themselves, set on their stout clay-and-cobble foundations (though, on the south, these were



PLATE 9.1 Surviving north wall of bathhouse (Crown © Royal Commission on the Ancient and Historical Monuments of Scotland); view south

almost all that survived), the only fixtures to be preserved in situ on a floor of clean, purple clay were the lower portions of two brick-built pillars. Each of these consisted of three square bricks, eight Roman inches across and four inches thick, based upon a bipartite tile plinth of greater width and depth; the pillars, which were set almost exactly two Roman feet apart, would probably have been capped by floor-tiles large enough to bridge the gap, and these would have been covered with a layer of some kind of concrete agglomerate. Significantly, three conjoining fragments of a tile measuring two feet square were found in the same sector of the trench as the pillars, as well as several smaller fragments from tiles of a similar thickness.

There could be no doubt that all this material represented the shattered structural elements of a Roman hypocaust, filling the basement of one of the heated rooms of a military bathhouse; nor was it to be doubted that the installation had been thoroughly and deliberately demolished. On the other hand, the loosely-packed nature of the demolition deposit, in which frequent voids were detected during excavation, indicates that this destruction was not the result of structural alterations. The latter are not uncommon in the life of the average bathhouse, but any building material thus discarded is usually firmly consolidated before reconstruction takes place. The evidence here, therefore, suggests total decommissioning by troops from the adjacent fort at the end of a period of occupation.

The more restricted window offered by trench A–A near the eastern end of the building (FIG. 9.1) casts no real light upon this episode of demolition, although it confirmed the eventual results of abandonment. It did, however, show that the easternmost room was provided with a floor of gravel (probably delved into when the north wall was quarried by post-Roman stone-robbers) and, therefore, unlikely to have been heated.

9.2 INTERPRETATION AND ANALOGIES

As a result of the above investigation, it was possible to confirm beyond doubt that the remains were those of an external bathhouse of the *Reihentyp*, a standard design. It was clearly associated with the nearby fort, possibly lying within an annexe attached to its southern defences, although there is no clear evidence of an enclosing ditch in any of the air photographs. The building recorded from the air represented the core of the bath suite, comprising three adjoining rooms: the westernmost, with the demolished hypocaust, measuring internally about 6.2m² (or 21 Roman feet), was presumably the *caldarium* or hot room; the middle room, measuring 6.2m by 4.4m (21 by 15 feet) the *tepidarium* or warm room; and the third room, measuring 6.2m by 5.6m (21 by 18 feet) the *frigidarium* or cold room. The projection at the western end of the bath-suite, no longer thought to be of apsidal shape, is best interpreted as the cheeks of the stoke-hole through which was fed the fire that heated the *caldarium* and, perhaps, the room beyond it. The internal furniture and function of the hot room were amply illustrated by the artefactual remains: its tile-and-concrete floor, beneath which the hot air circulated, the brick-and-tile pillars supporting the floor, the wall-cladding of *tubuli* or box-shaped flue-tiles through which the heated gases were vented from the basement-area to channelled voussoirs in the roof and thence to the open air. Interestingly, the categories and sizes of the square bricks and tiles were found to be precisely as prescribed for the construction of *caldaria* by Vitruvius (*Architectura*, v, 10), i.e. *bessales* 0.19m (8 Roman inches) across, *sesquipedales* 0.44m (1ft 6in), and *bipedales* 0.59m (2ft). The voussoir-stones, carved in higher-quality sandstone than the undressed local material used elsewhere in the baths, evidently caught the eye of stone-robbers in the post-Roman period, who appear to have pillaged the ruins for suitably imposing masonry; some were destined to adorn the grave of some presumably significant personage in the Dark Age long-cist cemetery at Parkburn about 2km to the west (Henshall 1966, 204–5, 209–10; Maxwell and Wilson 1987, 18–19). A number of the bricks, including *cuneatus* voussoirs, were found in secondary contexts in the fort (below 10.9.3).

The location of the presumed timber-framed vestibule and dressing-room (*apodyterium*) which would have given access to the suite is uncertain; it probably lay beyond or to one side of the cold-room, but it was not sought on this occasion. However, the faint, 10m long parchmark

which can just be made out in some air photographs running parallel to the bathhouse and about 7m north of its eastern half may indicate its location. Similarly, immediately to the south of the westernmost room at an angle of approximately 35° to the south wall of the bathhouse, parchmarks appear to define a roughly rectangular, stone-built structure, 4.6m by 2.1m overall, from which a curving feature extends downslope to the south and south-west for a distance of about 5m; the latter element could indicate the course of a drain, with its capstones still in situ. If the structure is contemporary with the bathhouse, it might possibly be identified as a latrine, or a hot dry room (*laconicum*), either of which is occasionally found in the vicinity of bath suites as a separate building. Some 10m south-west of the bathhouse the terminal of a second drain defined by sandstone slabs was recorded in a watching brief in advance of the construction of a modern drainage pipe trench. The drain was capped with a combination of sandstone slabs and tiles.

One point of interpretation remains to be addressed: the circumstances surrounding the decommissioning. The evidence of total destruction is clear enough, and the methodical process itself can, in general, be reconstructed: first the removal of the roof, possibly involving the careful setting aside of the valuable, and re-usable, voussoirs – one thinks here of the stack of voussoirs that were apparently so treated, but later mislaid, in the reconstruction of the bathhouse at Bothwellhaugh (Keppie 1981, 60–1) – then the dismantling of the walls, casting the stones to the ground outside and letting the box-flues and plaster fall within; and when the walls were lowered almost to the height of the debris without, the destruction of the suspended floors began. It is at this point that one stops to consider how the demolition-gang smashed through into the basement, that was eventually to be found so choked with pillar-bricks and tiles, and yet managed to leave so much of the floor's concrete covering near its original level. It was estimated that the fragments of two-foot square floor-tiles recovered from the excavation trench accounted for about 85% of the building's original floor area within the sector sampled; all but one were totally free of any encrustation of mortar, and the exception bore only the slightest of traces. All the slabs appeared to have been smashed into three or four pieces by a clean blow from some heavy implement, directed at its centre, and there was no evidence of crushing or splintering. The clearest picture one can form of the process is of the tile being supported at each corner in preparation for the blow – in other words, lying in its usual position atop the pillars of the hypocaust. It is difficult to believe that the tiles were then, or indeed at any time, covered with mortar. To put it another way, it is quite conceivable that the hypocausted room had never been completed. Such a situation would also explain why there was so little evidence of burning to be seen in the basement, especially on the clay floor, where any charcoal deposits would easily have lodged and quickly accumulated. The evidence, therefore, points in the same direction as the unfinished baths at Inchtuthil, with whose abandonment in A.D. 86/7 the demolition at Elginhaugh is presumably contemporary.

The character and possible complexity of the building having been examined, it is now appropriate to address some of the implications of this discovery, not to say the problems that arise. Not least of these is the fact that, as the bathhouse of an auxiliary garrison of the late first century A.D. in Scotland, Elginhaugh is without close analogies. This might not raise insuperable difficulties, were it not the case that in several categories of military archaeology the Scottish material includes items which have no or few exact parallels to the south of Tyne and Solway; temporary camps, certain types of fort, and watch-tower systems come most readily to mind.

To be brief, there are only two other bathhouses in Scotland to which a Flavian date can be assigned with reasonable certainty, i.e. those at Inchtuthil and Newstead, and both of these are, in one way or another, special cases. Inchtuthil (Abercromby 1902, 214–15; Pitts and St Joseph 1985, 215–18) served some purpose, as yet not clearly defined, but probably connected with the development of the adjacent legionary base; Newstead (Curle 1911, 94–103) was another manifest product of a legionary drawing-office (basically representing a quarter-scale version of the core elements of the great legionary baths at Wroxeter, possibly also constructed by *Legio XX*; it was associated with the prestige of the second most important command-centre on the Flavian northern frontier and may be presumed to have merited special structural treatment.

The fort of Elginhaugh, on the other hand, while important for the control of its own region, belonged to a less exalted category. And yet it afforded significantly more interior capacity than the average auxiliary fort baths built in Scotland in the Antonine period. Indeed, reckoned in terms of internal floor space, i.e. excluding the area occupied by the plunge baths (which were frequently housed in apsidal or rectangular projections from the main wall of the building), the Elginhaugh baths are no less spacious than those at contemporary Newstead, and half as big again as the Inchtuthil suite.

Size, however, is a poor criterion of significance in the absence of evidence of structural sophistication or robustness, and one may note, in this context, the relative narrowness of the walls at Elginhaugh compared with those at Newstead and Inchtuthil, or indeed with baths of later date in Scotland generally. Nevertheless, when one seeks parallels elsewhere for the combination of size and simplicity of plan, it is interesting that they may be recognised, for example, in the pre-Hadrianic baths recently discovered at Vindolanda (Burnham *et al.* 2001, 330–1) and a handful of Flavian sites in Wales. Of these the most relevant would seem to be the early baths at Castell Collen and Caerhun, especially the latter, the outline plan of whose central suite and wall-thickness (Lysons 1809, 127) are comparably reproduced at Elginhaugh. It will be obvious, however, that the identification of the building beside the North Esk as a Flavian bathhouse is just the beginning of a long process of enquiry, embracing not only the search for other first-century examples in Scotland, but also the development of the military bathhouse as an architectural category.

