NATIONAL HISTORIC PARKS AND SITES BRANCH

MANUSCRIPT REPORT NUMBER 147

PRELIMINARY REPORT ON A
1755 BRITISH GUARDHOUSE: 2E25
FORT BEAUSEJOUR
by
STEVEN BAKER
(1970)

EXCAVATION OF DRAINAGE SYSTEM
AT FORT BEAUSEJOUR
by
ANNE ZELLER
(1968)

PARKS CANADA

DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS

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Preliminary Report on a 1755 British Guardhouse: 2E25 Fort Beausejour

by Steven G. Baker

ABSTRACT

Archaeological excavations conducted during the 1968 field season at Fort Beausejour National Historic Park, New Brunswick revealed the remains of one of the guardhouses constructed by the British subsequent to the capture of the fort from the French in 1755. The remains found confirm the location of the structure as well as indicating it was a one-room, brick-and-timber building with a fireplace at the east end. The building was demolished in approximately 1800. The structure probably served through military occupations in 1755-1768 and 1776-1793.

Information from the research sheds light on general construction methods of the period, and most importantly on the relationship and original appearance of the structure to associated features in the vicinity.

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PREFACE

The excavation of the 2E25 guardhouse was carried out from July 22 to September 5, 1968 under the general direction of Mr. Jervis D. Swannack, Senior Archaeologist for the National Historic Sites Service. The field work was conducted by the writer, a site assistant, with an average of three men working full-time. At all times the excavation and recording system of the National Historic Sites Service was utilized (Rick n.d.).

I wish to give special thanks to the following individuals for their respective contributions of personality and their loyalty to the tedius excavation of this small and poorly preserved structure: Charles King, David Smith, Bruce Davis, and Al Goodwin.

Thanks go to Miss Jane Macaulay for the sketches of the reconstructed elements of the building and it's related features. Valuable interpretive aid was provided by Miss DiAnn Herst, Assistant Field Director of the Fort Beausejour Project, Mr. Peter Priess, Mr. Jack Richardson, Mr. Albert Wilson, and Mr. Steve Sheridan of National Historic Sites Service. Nearly every member of the research staff of the National Historic Sites Service has contributed in some way and my appreciation is extended to all.

CHAPTER 1

INTRODUCTION

The present report is designed to give a formal presentation of the archaeological research on one of the guardhouses at Fort Beausejour, New Brunswick. The report will emphasize the following points: structural information and interpretation of the excavated feature; interpretive discussion of the stratigraphy; and an integration of the guardhouse into the general picture of the structural history of Fort Beausejour. The report will discuss the correlation of lots and their interpreted proveniences.

Fort Beausejour is located on the Chignecto Isthmus at the Nova Scotia-New Brunswick border near the north coast of the Bay of Fundy, at Aulac, N.B. approximately three miles east of Sackville, N.B.

The investigations were designated as operation 2E25 which is defined as the excavation of the area on the east side and within the earthworks of the British entrance. The excavations were adjacent to the curtain wall leading from Prince Frederick Bastion to the east side of the British entrance, and were made in an effort to locate, expose and define the remains of the British guardhouse located in this area between 1756 and approximately 1850 (Fig. 1; Nadon 1966).

The results of the excavations were the location, definition, and confirmation of the razed, highly eroded, and poorly preserved remains of approximately one-half of the guardhouse constructed on the east side of the British entrance in 1756 (Nadon 1966: L: 13; Figs. 1,2,10,11).

The excavation of the guardhouse remains consisted of a series of narrow parallel trenches running into the curtain behind the structure, with another series of trenches crossing perpendicular to these trenches and parallel to the curtain wall (Fig. 5). When the eastern extreme of the building had been located it was necessary to establish how much further back into the curtain the structure extended. An extension of one of the previous trenches was continued into the curtain for a distance of three feet. This extension showed the remains of the south foundation; another series of trenches was then excavated along the predicted line of this foundation. The result was that eventually, by this series of small trenches, the remains of a diagonal one-half of the structure were located (Fig. 2). The slope of the curtain yielded better preserved structural remains the deeper the excavations progressed into them. The outer limits of the structure on the north and west were so badly eroded by water action from a later drain built partially through the

structure (Fig. 2) that few traces were located in the short time spent researching this area. It was not until the south-east corner was excavated that any substantial remains were found.

A total of 15 sub-operations (Fig. 5) were utilized; they included 2E25A through 2E25Q (excluding I and O). A total of 62 lots were incorporated, giving an average of four lots per sub-operation. In nearly all instances the lots correspond to natural stratigraphic layers, however several lots were excavated arbitrarily. The sub-operations are in all cases based on predominately arbitrary decisions. The excavation was carried out with shovel and trowel. No power equipment was utilized.

It is to be noted that due to the highly eroded and poorly preserved remains encountered, a great amount of the information obtained is of the negative nature. In many cases the data recorded for the excavation is so very sparse that it is inconclusive and not interpretable.

CHAPTER 2

STRUCTURAL REMAINS

The remains of the guardhouse have allowed for some general observations concerning its original configuration and construction to be made. The building was a one-room, single-storied building measuring 21 ft. by 27 ft. It was of brick and timber construction built on a simple stone foundation at ground surface, and had a single open fireplace.

The structural remains of the building include portions of the fireplace, foundation, floor joists and flooring, and elements of a brick and timber wall. Other than a few scattered portions of other elements of the structure, the above listed remains constitute the total remaining evidence (Fig. 2).

As can be seen in Figure 2, the entire south side of the building measured 27 ft.; the width was approximately 21 ft.; although this is only an interpretation based on a projection of the remains of the east end of the building. The remains of a large fireplace were located against the east wall, presumably in the center. The overall dimensions of the fireplace are 10 ft. wide by 7 ft. in depth. The wall remains consist of up to ten horizontal brick courses rested directly on top of a sleeper-beam which runs under all the brick wall remains and is suppor-

ted by the stones of the foundation (Fig. 2). There is evidence of vertical uprights and horizontal facing or siding for the walls which will be discussed in detail. The foundation is composed of a row of unmortared fieldstones, one stone in width, extending just slightly beyond the wall remains. Joined to the sleeper underlying the wall are the remains of eight joists for the flooring, of which a few badly decayed portions remained (Figs. 2,12,15).

The individual discussion of the specific elements of the structure will be dealt with in outline form beginning with the foundation so that the discussion can develop from the "ground up".

Foundation

The foundation remains (Figs. 2, 12) consist of an L-shaped line of stones apparently resting on the old ground surface. Evidence for a foundation trench was not found.

The foundation stones are a grey crystalline limestone fieldstone. In some cases they are split, but in few are they dressed to any appreciable extent. They are placed end-to-end, unmortared, in a row one stone wide, and originally probably ran under the complete outline of the building (Figs. 2, 12).

The dimensions of the stones are approximately 1.5 ft. long by 1 ft. wide by .5 ft. thick. The elevations of the stones vary only slightly along the entire outline of the structure. The elevations range from 125.60 ft. A.S.L. to 125.81 ft. A.S.L. The elevation of 125.80 ft. A.S.L. is representative of the top of the general foundation level. Even with its simplicity, the foundation would have to be described as well-planned and constructed, due to the regularity of the elevations, size of the stones, and the good general alignment of the foundation stones.

Floor

The floor of the structure consists of boards running east-west longitudinally supported by a series of parallel joists running north-south across the width of the building (Figs. 2,4, 12). The remains of the floor boards were badly decayed and in most cases had decomposed. Due to this poor preservation it is not possible to make any statements concerning the dimensions of the floor boards. The floor boards were nailed to the joists. An attempt was made to mark the locations of the nails as they were found; however, this was soon abandoned as nails from many parts of the structure were scattered throughout the floor area. No patterns were discernable and it was not possible to separate or differentiate the various scattered nails from the original flooring nails.

The floor joists consisted of seven north-south beams placed at intervals of approximately 2.5 ft. edge-to-edge. They would have originally measured approximately 6 in. wide and somewhere in the area of 20 ft. long (the internal width of the building), except in the vicinity of the fireplace (Fig. 4). Their original thickness is impossible to ascertain.

In the present discussion the term "joist" is applied to the parallel timbers that hold up the planks of a floor (Guralnik and Friend 1962: 790). The term "sleeper" is used to indicate a timber or beam laid horizontally, as on the ground, to support something above it (Guralnik and Friend 1962: 1371).

The joists were attached to a sleeper beam lying on top of the foundation at each side (Figs. 2,4,12). The sleeper's dimensions are not known, again this is due to the state of preservation. It may have been necessary to utilize two segments set end-to-end to reach the length of 26 ft. The wood was so badly deteriorated in both the sleeper and joists that it was not possible to state precisely what type of joint was used in <u>all</u> of these connections; although, after careful study of the joint remains and the location of one intact joint in the structure (Fig. 4a: pt. i) it is suspected that the joists were attached

to the sleeper with an "inset" butt joint, as opposed to a direct butt or a mortise-tenon (Fig. 4a-b).

The joists were supported at irregular intervals across the structure with stones set on the ground surface (Fig. 2).

The original floor level was approximately 126.3 ft. A.S.L. The reconstructed sub-floor system is shown in Figures 3 and 4.

Walls

The wall remains show that the walls of the structure were composed of vertical posts set at intervals of 2.5 ft. and joined to the sleeper beam along the top of the foundation. The exterior of the structure was covered with horizontal board siding or facing attached to these uprights. The space between the uprights was filled with brick coursing set directly on the sleeper beam as either an interior "wainscotting" or as a wall fill with an interior facing of wood applied over it. The image resultant from this interpretation is that the walls of the building were heavy and solid. Wainscotting is usually used to indicate the lower portion of a room when it has a finish different from that of the upper (Guralnik and Friend 1962).

Sleeper

A large sleeper beam formed the major support of the walls. This sleeper beam, whose remains indicate it was a rather substantial structural member, perhaps as large as 6 in. by 6 in., was laid directly on top of the foundation stones (Fig. 2). There possibly were several shorter beams laid end-to-end to form the length necessary to run the entire length of the structure, although it is also possible that one long beam could have been used. The sleeper was very badly compressed and horizontally distorted so that little can be said of it. Its major interest regarding our discussion is in its relationship to other structural elements.

Uprights

The evidence for vertical posts as part of the primary construction are postulated from indirect evidence, as there is only the sparsest physical remains of them.

The most significant evidence for the existence of vertical posts is shown in Figure 2(also Figs. 13, 14). At the southeast corner there is an obvious "gap" in the joining of the sleepers and the brick coursing. The nearly square and perfectly open corner indicates that a large, probably square-sided beam was

located at this point. This evidence is in keeping with normal building structural requirements (Richardson 1969). Some form of support simply had to exist at this point. The very obvious "flimsyness" of the brick coursing alone would indicate that the brick was used only in conjunction with other structural elements. It is not felt that a simple brick wall composed of brick singly coursed in a "common" bond pattern (Rick 1962) would be at all structurally sound. Figure 4b: pt. b shows this corner point and it's inferred general configuration. That there was a post at this point is accepted by the researcher and this time is projected for all four corners of the structure (Fig. 4a: pts. b,f,g,h).

There is slight evidence of possible vertical remains of other posts (Fig. 4a, b,c: pts. c,d; Fig. 2). This evidence consists of a very few fibers of vertical wood grain. If the "as found" drawing (Fig. 2) will again be consulted, it will be noted that at these points and at nearly regular intervals of roughly 2.5 ft. along the east-west length of the foundation, sleeper and brick coursing, there are rough gaps and some horizontal displacement of the sleeper and brick. This would indicate and is postulated as evidence of vertical uprights having

been forcefully wrenched from their original positions in the wall. It is not known if these beams were of the same dimensions as those at the corners, but they apparently did exist and must have been an integral portion of the construction.

The method by which these uprights were joined to the sleeper is not known, but three possibilites are given in Figure 4 d,e. They are in order: mortise-tenon, direct butt, and modified halflap.

At point a (Fig. 4a) there were two large wrought iron spikes driven from the outside between the bricks. These spikes were found between the second and third courses of brick. It is not known if these are evidence of an upright or simply the exterior wood siding, which will be discussed shortly. An upright at this point would be possible, but it is not necessarily of the same size and structural importance as those at the other points. There is no evidence that this upright (if it existed) was set within the brick course as at other points, as the brick portion of the wall at this point is continuous and uninterrupted. It is felt that the presence of the spikes may indicate that they were used to secure wood siding to a secondary point of wooden support.

In the discussion thus far, an attempt has been made to demonstrate the evidence for, and configuration of, a series of vertical wooden posts attached to the sleeper which runs along the top of the foundation. The posts were apparently placed at intervals of roughly 2.5 ft.

Wood siding

To discuss the wood siding it is not possible to discuss any direct evidence of its existence, as there is none. Before continuing, it is necessary to mention a few points which will be discussed in detail at a later time, but that are the basis for the interpretation for wood siding. If our interpretation of this structure is correct thus far, there was a series of vertical posts, with a possibility of wood siding running horizontally across the exterior. It would have been necessary for some support to have been present in the building of the brick wall, as it is felt that it would have been impractical to build such a "flimsy" wall without such vertical support. If we can assume for the moment that there was wooden siding present, then this would have provided sound vertical support for such a construction. The south corner near the east end of the exterior surface of the brick coursing showed a very heavy mortar surface. The portion of the wall from which this mortar was observed collapsed

prior to the plane-table recording, and it is not illustrated in this report (68-16-118). Much of the mortar was eroded on the surface, but good samples of the impressions in the mortar are shown (Figs. 18,19). It was at first thought that these "scars or striations" might be textural finishing of the wall exterior. After careful examination, the consistent and nearly perfect horizontal impressions clearly indicate wood grain impressions. It was probable that the wet mortar recording these wood grains be added after the wood, of which we have no direct evidence. The relationship of the brick to this siding is illustrated in Figure 4b,c,f,g.

Brickwork of wall

The brickwork which sits directly on top of the sleeper beam between the uprights and against the postulated board siding is interpreted as having been either an interior finish in the form of a "wainscotting", or as a wall fill with additional wood finishing covering it on the interior. The latter possibility is preferred by A. Richardson (1969), as it is felt that within the normal construction patterns of the time, a wall as poorly put-together as this would not have been left exposed in a

British military structure. There is no evidence of such additional finishing, and this question is, of necessity, left unresolved.

The total height of the brick coursing is not known, but it was at least 15 courses, as reconstructed from the brick collapse shown in Figure 13. This number of courses would have placed the known height of the wall at approximately 3 ft. If it went any higher is not known. If this is representative of the general height of the coursing then the brick would have served as a form of wainscotting. If not, then it would probably have been a general wall fill, but it is not known if even this would have stood as high as the complete and total height of the wall. Figure 4 f, g illustrates the two major possibilities for the purposes of this brickwork.

The brick is mortared to the sleeper beam and is coursed in a rough fashion resembling the "common bond" pattern (Rick). The bricks are coursed lengthwise with the widths serving as the horizontal contact surfaces (Fig. 13). This brickwork would not appear to be an example of particularly good masonry.

The wall is composed of broken and some whole brick. It is postulated that the bricks were re-utilized from some previous structure (due to the broken lengths), or that they were possibly

"wasters" from local brick manufacturing.

The brick from the intact portions of the guardhouse wall is rather irregular, often with the sides overhanging where the mold was in contact with it. This overhang tends to give the brick a "lip" at the edges in many cases. It is irregular in size, even in the complete specimens. The paste of the brick contains large sand grains and often small fragments of brick, in some cases up to .5 in. or so (approximate). The color is variable, but is generally a deep red. The size as previously mentioned is highly variable, but is an average of .61 ft. long, .30 ft. wide, and .15 ft. thick as based on 30 complete specimens measured from the structure. These bricks vary from .70 ft. to .55 ft. long, .36 ft. to .25 ft. wide and .19 ft. to .14 ft. thick. Additional measurements are available on another approximately 400 individual whole and half-bricks (68-16-147).

Fireplace

Remains of a substantial fireplace (Figs. 2,12,15) were found in a condition which allows for some comments concerning its original configuration to be made. The overall dimensions (horizontal) are approximately 7 ft. east-west by 10 ft. north-south. Only the hearth and support base for the chimney were

found intact. The fireplace had a hearth apron surrounding it on three sides (Fig. 3). The fireplace was of brick and rubble construction, but it is not possible to make a statement about the amounts of each or to interpret this construction. The firebox was composed of a horizontal brick coursing (Fig. 3). The brick of the firebox was laid end-to-end on edge. The brick was badly deteriorated due to prolonged exposure to heat, but appears to be similar to the brick in the walls. It would have been necessary to destroy the feature to obtain samples of this brick.

A portion of the north edge of the fireplace remains were removed in an adjoining operation (2E16S) conducted earlier (Zellar 1968). It was possible to implement simple projection within the structure and to determine the overall dimensions of the discussed elements and the subsequent reconstruction drawing (Fig. 3).

The firebox of the hearth measures 6 ft. across the outer edge, and 4 ft. across the back edge. The firebox was approximately 2.5 ft. in depth. The original functional elevation of the floor of the firebox was 126.6 ft. A.S.L. The apron of the hearth was composed of fieldstones mortared together and completely surrounding the fireplace on three sides. The apron

extended approximately 2.5 ft. out into the room at the front (Fig. 3) and approximately 1 ft. on the sides of the fireplace. The functional elevation of the apron was approximately 126.5 ft. A.S.L. which is nearly the same as for the firebox.

The lateral edges of the apron are stepped on the edges in order to accommodate and support the floor joists which butted there (Fig. 3). It is not known how the flooring system joined the apron at the front edge of the fireplace. It is possible that there was another sleeper beam here for that purpose (Fig. 4a: pt. j).

The plan of the structure showed some brick present outside of the firebox (Fig. 2). It is not known if this is an indication that the superstructure of the fireplace was of brick, but Figure 3 shows it as a speculation. The fireplace proper may have been of rubble stone or of brick, or a combination of both. The base of the fireplace is of rubble stone, mortared and apparently set directly on original ground surface (Fig. 3). Its elevation is approximately 126.5 ft. A.S.L. It measures 4.5 ft. east-west and 8 ft. north-south.

The firebox was probably brick lined (Fig. 2) which is usual due to the necessity for withstanding intense heat. A postulated

general configuration of the chimney is given in Figure 3.

Little comment is made on the relationship of the backside of the fireplace and wall. It is possible that a wooden wall ran against the back of the chimney, although the back of the fireplace may have served as the wall.

Large amounts of rubble stone were found overlying the remains of the structure, which may be evidence of the collapse of a masonry chimney. An example of this rubble is shown in Figure 16. The specific rubble in this figure is also possibly some unidentified feature such as revetting, stepping stones, etc.

Roof and other remains

There was no evidence to indicate the type of roof on the guardhouse; a gabled roof is probable and a hip roof was possible (Richardson 1969). In the reconstruction drawing (Fig. 10) it is shown with a gabled roof. Nothing is known of the method of shingling, although a piece of slate was found in the upper levels of the excavation. The roof would probably have had either slate or wooden shake shingles.

One long beam was found overlying the floor remains. This beam extended from under the collapsed brick wall in the southeast corner to the southwest corner in an attitude perpendicular to the joists of the floor. It is difficult to say for sure, but

it is felt that this beam (even with its perfectly perpendicular attitude to the rest of the floor joists) is a piece of the roof superstructure, or interior finishing of the building, which was carried down when the walls collapsed. It was a large beam, possibly measuring as large as 4 in. or 6 in. thick, and may well have been a sill which ran along the top of the wall. Other scattered pieces of wood were found, but they must simply be attributed to the debris that accompany the deterioration and collapse of a building such as this.

Miscellaneous elements of the building

It is not possible to discuss windows, doors, and similar aspects of the structure in detail. It is possible to make a few generalizations though. The building probably had windows. There conceivably was one on both sides and at the west end. There is no evidence of window placement. The reconstruction drawing (Fig. 10) shows such a window placement, but again, this is only speculation.

It is probable, due to the size of the structure, that it only had one door, and it is possible to speculate on the placement of it. A portion of a "thumb-lift" doorlatch was found in

lot 2E25P2 which is a layer of occupational debris believed associated with the structure's occupation. This latch was found near the southwest corner of the building. It is felt that the door of the building was located in the vicinity of the southwest corner of the building. This is borne out by the fact that the latch had portions present which would have originally been mounted on the door frame as well as the door. Regardless, the door would probably have been in the vicinity of the southwest corner for functional purposes also. The following evidence will tend to support this hypothesis: the evidence from the door latch, the necessity of a door in this area for ready access to the main gate of the fort and to the other guardhouse at the main gate, and most importantly the apparent and rich artifact-bearing occupation fill (Figs. 6, 17) which forms a strong inferred association between the guardhouse, the entrance to the fort, and a possible casemate in the curtain at that point. This subject will be discussed in detail in the historical discussion of the report.

STRATIGRAPHY

Stratigraphy of the structure

The stratigraphy overlying the guardhouse remains is composed of three major units. The drawings of the profiles made during the course of the excavations show a great deal of "micro"-stratigraphic detail that, within the broad designations of the three basic components of the profile, can often give a very complex and detailed image of the stratigraphy.

The first major unit, directly overlying or associated with the guardhouse remains, is the accumulation of occupational debris from the period of the structure's existence (layer I on illustrated profiles). Overlying and practically inseparable from the occupational debris is the material from and accompanying the destruction of the building; rubble stone, bricks, mortar, wood scraps, etc. Filtering down over this remaining scattered structural evidence is another accumulation of soil (layer II on illustrated profiles); in this case soil which has moved down from the curtain at the back of the structure (Fig. 6). This is the second major component. Last but not least, is the more recent topsoil and sod development (layer III).

Figure 9 illustrates the overall profile at the west end of the excavation. Figure 8 illustrates the profile overlying the

major portion of the intact remains of the structure. Figure 7 gives an example of the profile running over the top of the south wall of the structure in an east-west fashion. Figure 6 gives an example of the east-west profile against the very back wall of the excavation unit, and is the master profile for the area and demonstrates the stratigraphy of the curtain wall. Each of the major layers will be discussed and correlated with the appropriate illustration.

Occupational unit, layer I

The soil directly associated with the occupation of the structure consists of two elements, an organic soil layer and a layer of overlying occupational debris.

In most cases the flooring and any other wood from the building had decomposed and turned to an organic soil layer. This layer is illustrated as layer 6 in Figure 8, where it is shown as containing nails. These nails were added after the profile was drawn in the field and are only generally representative of the provenience of the nails found associated with this layer.

Directly overlying and inseparable from the decayed floor remains is a layer of occupational debris. This soil matrix is basically a silty clay and generally is dark reddish-brown

5YR 4/4. The layer contained fragments of wood believed associated with the structural elements of the building and contained artifacts thought to be directly associated with the occupation of the building. It is to be treated as having the same general provenience as the material from the floor. It is shown as layer 4 in Figure 8. This layer has association with occupation related debris on the exterior of the building which is illustrated as layer 5 in Figure 8. Layer 4 in Figure 9 corresponds to the material from the floor in Figure 8, and layer 5 of Figure 9 corresponds to layer 5 in Figure 8. On both drawings these layers are shown to contain artifacts which were placed on the drawing after they were drawn in the field.

Directly overlying and often mixed with this major unit are rubble, brick, and some wood scraps from the destruction of the building. This material caused the interface of layer I and II to be irregular and often hard to separate which probably resulted in some mixing of material from layer I and overlying layers during excavation.

Soil transported from the curtain, layer II

Directly overlying the occupational layers previously discussed is a layer of "till like soil" which has moved down from the curtain wall at the back of the structure by the process of earthflow. This material is described as "till like" due to its content of unsorted grain sizes, and the fact that the curtain is composed of culturally disturbed till from the site. This material reflects the basic properties of a till (see Appendix I), and although it is disturbed is best described by this term. However, for the sake of continuity in terminology with the rest of the site, the term "clay" has been used on the illustrated soil profiles. This layer is basically a yellowish-red 5YR 4/6. The layer is shown as layer 3 in Figures 8 and9. Layer 2 Figure 6 shows the layer in relation to the stratigraphy of the curtain from which it is derived. This layer moved downslope covering the remains of the guardhouse to varying depths, but always indicates the major direction from which it moved. The layer may have cultural materials from several different time periods present in it. It did serve to seal off the remains of the guardhouse from the more recent soil deposition. This movement is probably still active.

The layer shows some random internal units such as mortar, brick chips, and general rubble, but little interpretive value can be derived from these (Figs. 6,7,8,9).

Topsoil, layer III

Directly overlying the curtain derived material previously described is a more recent sod and topsoil development. This soil is best described as a silty-loam. It is dark brown and a 7.5YR 4/4. This soil may have been partially transported downslope from the curtain, but some of it was probably wind deposited. This layer is generally free of cultural debris, particularly the upper portions of it. This layer is shown as layers 1 and 2 in Figures 8 and 9.

It should be noted that in Figure 8, the stratigraphy of sub-operation 2E25K only shows as two layers in the original field drawing (68-16-D33) and that layer 6 was added when the original drawing was interpreted. Figure 9 is an interpretive drawing only, as there is no field drawing for this complete profile.

The interior slope of the curtain near the back wall of the structure would have been considerably steeper than at the time of excavation, and at least for a while was probably generally clear of the building. It is sure that this slope

was subject to soil movement also, and that it has been constantly encroaching on the back of the guardhouse. It is not possible to make particular statements concerning this slope, but we know that it was probably necessary for it to have been revetted. However, Nadon (1966: G: 3) gives no documentation for any specific interior revetting.

The slope of the curtain has apparently been altered drastically since the building was constructed. Large amounts of soil have moved northward down the inside of the ramparts as shown in Figures 8, 9. This movement was probably by the process known as earthflow (Thornbury 1965b: 91). This movement is responsible for roughly two-thirds of the total stratigraphic profile overlying the structural remains of the building. It is not possible to make statements concerning how this movement has affected the configuration of the curtain, except to say that it has surely widened it and considerably reduced it in height. It is possible to show some relationships of the original configuration of the curtain to the structure in Figure 10, although this is only a very generalized and schematic presentation.

Within the curtain wall there is a stratigraphic unit which warrants close attention. Figure 6 shows a layer of shell

and occupational detritus in the far west end. This layer appears reasonably well delimited over the area at the southeast corner of the guardhouse and the entrance excavations (2E26T; Gusset 1968). This layer of debris apparently shows or at least indicates the general contour of the area between the British entrance and the probable location of the door in the southwest corner of the guardhouse. It is felt that the area reflects an area of activity probably associated with the placement of the door and the main entrance (Figs. 6, 17). This is demonstrated by the occupational debris and predictable range of daily activity in the area.

CHAPTER 3

HISTORICAL DISCUSSION AND COMMENTS

Historical Documentation

In the following discussion all information, unless otherwise cited, is taken from Nadon (1966). Prior to discussing the direct history of the guardhouse it is necessary to mention an earlier structure known to have been built on the same site.

With the first construction of the fort by the French in 1751, the indirect history of the structure begins. On the plan of Franquet of 1751, a men's barracks is shown in the location which later became that of the guardhouse. This structure also shows on the plan of Beausejour of 1752. However, on Brewe's plan of 1755 the men's barracks is shown as "torn down". It is probable that this building was demolished during the seige of 1755. This building measured 21 ft. by 63 ft. and was probably of wood construction. It had one chimney and was a one storey building. The equivalent dimension of 21 ft. for both the guardhouse and the barracks width lends itself to some speculation concerning possibilities of re-use of parts of the earlier building, but no more can be said of it.

There is some likelihood that we will have a small amount of material from the barracks in the artifacts from the 2E25 excavation. Consistently throughout the overlays in Nadon's report, the barracks is shown occupying the area of the later

British guardhouses. There is no strong evidence to indicate that we have encountered any of its remains or materials. It simply seems strange that there would not even be a slight bit of detritus from such a large building. It is possible that such acknowledgement of the barracks may be necessary at the time when we analyze the artifacts from the excavations.

The guardhouse history

With the surrender of the Fort to the British in June of 1755 the direct history of the guardhouse begins. After the capture, the entrance to the fort was changed and a new one built in the curtain between Prince William and Prince Frederick Bastions (Fig. 1).

Along with the new entrance (which was excavated by Gusset in 1963 as 2E26T) two guardhouses were constructed on the parade square, one on either side of the entrance. The date for the construction as given by Nadon (1966: L: 13) is 1755-1756. The dimensions are listed as 21 ft. by 27 ft. which are the dimensions of the building excavated. It is shown in the overlays as in the exact spot located by excavation. It is apparent that the structure mentioned in the report as the 1756 British guardhouse is the structure excavated in 1968.

It is well established that the building was constructed in 1755-56, but it is extremely important to our understanding of the structure to know when it was torn down, or whether it was simply abandoned and fell down. Both guardhouses appear on the plan of 1779. In the writer's opinion, this building is not adequately identified as the one on the sketch of 1803, although Nadon (1966: G: 13) states that it is shown. Although it probably was gone by 1803, this is not certain. Nadon asks if this might be the officers' quarters mentioned in the return of stores and buildings for that year. It is the investigator's opinion that it was not the building so mentioned in the following quote (Nadon 1966: C: 7): "old officers quarters, 1 storey high, with 4 rooms, vacant". That it was this building is somewhat less than plausible due to the four rooms mentioned. Although the structure excavated could have had four small rooms, it would have been rather strange for the building to be divided up into four rooms with only one large fireplace to heat the entire structure. There is the possibility of stoves in such an instance, but this is speculation; although a layer of coal ash does appear in the back of the entrance to the Prince Frederick Bastion (Korvemaker 1967). The guardhouse was apparently gone by 1823, and if not, then surely by 1833 when the fort ceased to be

Nadon asks if this is the building shown on the 1845 sketch. It is apparently not that building because the one chimney is shown in the center of the building. This is possibly a mistake on the part of the artist (not unheard of), but it is not likely that it would have survived for nearly 100 years. A drain is shown cutting through the north part of the structure on Figure 2, and it certainly must post-date the destruction of the guardhouse. If the drain were associated with the more extensive repairs to the fort, then the only applicable date we have would be 1776-1883. If the drain were built at that time, then the guardhouse was even shorter lived than we had thought. Until all of the structural reports are completed for the site, the exact terminal date (if it can be determined) will have to wait. The latest possible date for the drain must have been no later than approximately 1825 at the latest. The presence of the drain supports the theory that the structure was destroyed by about 1800. Regardless, there is no building shown on the site in 1853.

The guardhouse probably served through the first two British occupations of the fort, 1755-1768 and 1776-1793. When the fort was re-occupied during the War of 1812, the following quote was made in reference to the fort: "so much out of repair

as to be untenable" (Nadon 1966: 45). It is at this time that we have no supporting evidence for the existence of the structure, which gives further support to the view that it was gone by approximately the beginning of the 19th century. This is in keeping with the theory that if it was going to be allowed to fall into disrepair it would have been when the fort was vacant, such as it was after 1793 when the garrison was withdrawn and no further evidence remained.

There is some evidence that may indicate the possibility of a structural fire in the guardhouse. Scattered in the fill overlying the floor in the west end of the structure were occasional charcoal fragments. With the exception of a charred board (Fig. 7) the charcoal was only a light scatter. It is possible that this is an indication of a fire which slightly damaged the standing or partially destroyed remains of the building. It was by no means a severe fire, if a fire at all, but may have contributed to any decision to raze it (which is only suggested by the evidence found). It is felt that it may simply have caused enough damage to make the building untenable. Hypothetically, it is also possible that the fire was started in conjunction with any razing which took place. Any fire was apparently not extensive nor extremely "hot". The slim evidence

mentioned simply indicates the possibility of a partial fire and a demolishing of the building. It apparently was not simply allowed to fall apart and stripped of its building materials at some point. Razing is evidenced by the extreme lack of construction materials and the displacement of the wall sleeper and uprights as discussed previously. It is possible that the charcoal is not from a structural fire, and there is no evidence for a structural fire in the vicinity of the fireplace.

If there is sparse evidence to suggest that the building was gone by the 19th century, there is even less to suggest that it was standing much into the 19th century. That these preliminary interpretations have thus far made bold statements may be judged by the following two points: determination of the occupational span of the guardhouse through artifact analysis, and identification of the structures referred to in the references and drawings of the 19th century which were discussed earlier.

Let us now turn to another important question, to what other structures of the fort is the guardhouse associated? It is of course associated with the guardhouse at the other

side of the entrance, but we have no information on it at this time, and also with the British entrance. Figure 10 shows the relative positioning of the entrance and the guardhouse.

The stratigraphic unit discussed for the southwest corner of the guardhouse and the entrance is probably an area of rather intense activity. Its central location to the gate and to the probable area of the door of the guardhouse made it the center of a good deal of activity. This is evidenced by the heavy accumulation of occupational debris that is shown in the profile (Figs. 6, 17) and in the excavations of 2E26T (Gusset 1968). This layer of debris, by their tightly sealed nature, is an indication of the great physical changes (i.e. soil movement) that have occurred in the configuration of this area since the British capture of the fort.

Comments on reconstruction drawing

The reconstruction drawing shown in Figure 10 is intended to give a generalized view of the guardhouse in relation to the general configuration of the earthworks and associated features. The building shown in this drawing is generally of windows and doors is conjectural. The door may have been

located at the west end of the south wall facing the opposing guardhouse.

A few notes are also in order concerning the configuration of the curtain and its revetment. Although the configuration of the curtains is not known, they were probably revetted in-order-to prevent erosion and mass movement of the curtain. It is known that the French had revetted the curtain exterior with dry stone to the height of three feet. (Nadon 1966: G: 3). The revetting shown in Figure 10 is not intended to be precise, but is simply a revetment, which there probably was, even if we do not know of what material it was made. It is not known if both sides of the curtains were revetted with stone. There is no physical or documentary evidence for interior revetting.

Comments concerning artifacts

It is possible that there will be four main periods of occupation evident at the guardhouse and its associated features. These periods will probably be from 1751-55 and French, 1755-1768 and English, and 1776-1793 and English, as well as later 19th century occupation. It is probable that a good deal of material relating to the 19th century is present, but at this point it is not felt that such material will relate

directly to the occupation of the structure.

The shell-filled cultural deposit (Figs. 6, 17) is apparently a temporally sealed layer (due to fast soil movement in the ramparts) and may reflect a relatively short time span relating to the period 1755-1793. This time span is based on documentary evidence only, and may be proven different. It is apparent that a great deal of such soil movement was taking place in short periods of time during the 18th century as evidenced by the following quotations: "By 1761 the fosse in front of the Prince William Bastion was nearly filled up and the adjacent curtain was almost filled in" (Nadon 1966: C: 4). Could this also be indicative of the curtain at the guardhouse?

From Goreham's description of the fort in 1776, the fort was simply falling away as pointed out in his quote (Nadon 1966: C: 5):

> "the face of the bastions, curtains, etc., by being so long exposed to the heavy rains and frost were bent down to such a slope that one might with ease ascent any part of the fort, which was guarded by a line of small pickets only about ten feet in height (placed in a shallow ditch) that we had been able to erect during the summer, the covert way without any pickets and the glacis reduced almost on a level".

It is felt deposits will prove to be sealed relatively soon after deposition due to such movement of the earthworks.

In reference to the occupation of the guardhouse, it is known that there were eight men on duty at the main gate day and night (Nadon 1966). It is not known how many men would have been stationed in the direct vicinity of the guardhouse, but this is a general indication of the possible complement utilizing the structures (i.e., both guardhouses). It should be remembered that there were two guardhouses in use at the front gate for at least part of the military occupations. It is possible that one of these structures was used more solely for detention of prisoners and the other for the quarters of the guards. It is also possible that one of the structures had some form of cells. No evidence of cells or similar "devices of detention" was found in the east guardhouse.

Steven Sheridan (1969) was consulted on the foreseeable range of activity at the guardhouse in times of military occupation. A specific question raised was: "Could the presence of numberous bone buttons and button blanks at the guardhouse be attributed to the military personnel when off duty? Mr. Sheridan felt that this building would probably not have been

frequented by persons when off duty, as they would want to get as far away as possible. Furthermore, he felt that if this was the result of military occupations then it should probably be attributed to the activities of prisoners temporarily detained at the guardhouse. These individuals would have to be allowed fresh air (military requirement) every day, and may well have been allowed to carve and cut buttons in the vicinity of the structure. These comments are simply ideas which may have a relevant bearing on the interpretation of artifacts from this area.

CHAPTER 4

ARTIFACTS

Preliminary Comments

Artifact associations from the guardhouse excvations will be described in the context of the three major stratigraphic units discussed in the section on stratigraphy. Due to varying thicknesses of the layers and the nature of the inclusions occurring in the layers (i.e., large rubble, brick, wood, etc.), it was not always possible to be precisely sure of the layer from which specific artifacts came during the course of excavation. There was some erosion of layers on the northward extreme of the excavations which will cause some mixing of materials. It should generally be possible to demonstrate differences in time for the artifact contents of the major stratigraphic layers, although there will be some overlap caused by both cultural implications of the artifacts themselves and by the limitations of our ability to hold to absolute soil separations during the excavations.

The artifact groupings will basically work out in terms of the following headings: (1) materials which are directly associated with the guardhouse occupation on both the structural interior and exterior; (2) materials relating to the period

of occupation through the destruction and post-occupation period; and (3) recent materials post-dating the structures existence.

Lot-Layer Correlation

Table 1 presents the "lot-layer correlation" in terms of layer number, description of the layer, general layer significance, and the lots associated with the specific layers.

Table 2 gives a spacial breakdown of lots which are believed to reflect proveniences directly associated with the occupational period of the structure (i.e., layer I), as well as possible earlier occupations of the site (i.e., French occupation). This does not include materials dating to the occupational period which were found in proveniences which have not been tied to the period of direct occupation (i.e., layers II and III).

The dates indicated for the artifact groupings are preliminary and are based on present interpretations of the sequence of historical events concerning the structure. It is highly possible that artifact analysis will necessitate revisions in these tentative interpretive dates.

CHAPTER 5

SUMMARY AND CONCLUSIONS

The excavations at the guardhouse revealed that it was built of brick and timber construction. It was relatively a simple building of one room with a large open fireplace in the center of the east wall. Its dimensions were 27 ft. by 21 ft.

The building is believed to have served through the first two British occupations of the fort (1755-1766 and 1776-1793). The building probably served as quarters for the men on guard duty at the main gate and/or for the temporary detention of prisoners. It is possible that the structure was utilized by civilians during periods when the fort was not garrisoned.

The structure is associated with another guardhouse which was located on the opposite side of the British entrance. This structure would have shared the range of cultural activity centering around this area of the fort. The guardhouse excavated thus constitutes a portion of an activity area composed of the main fort entrance and two guardhouses.

The structure was robbed of its construction materials and may have been intentionally razed. It was apparently destroyed near the beginning of the 19th century and was

probably badly deteriorated soon after the military occupation of 1776-1793. It is possible that a structural fire partially damaged the building and contributed to any decisions to raze it. It is suggested that the building was not simply allowed to "fall apart", because of the lack of structural materials and some evidence of partial forceful demolition. There were no buildings located on the site after the guardhouse.

The stratigraphy of the structure reflected three major components. Directly associated with the building is a layer of occupation debris which appears on both the interior and exterior of the structure. This material was effectively sealed off from more recent soil deposition by movement of material from the fill of the curtain at the back of the structure. This material moved downslope of the curtain by the process of earthflow in a northerly direction. It is probable that this downward movement was active up to the present time. Directly overlying this material is a more recent sod and topsoil development.

The building constructed by the British in 1755-56 served

the British military for the last half of the 18th century. The structure can be considered a significant portion of the structural evolution and military history of Fort Beausejour.

APPENDIX I

GEOMORPHOLOGY DISCUSSION

General Discussion

In conjunction with the interpretation of the excavations at the 2E25 guardhouse an attempt was made to determine the soil development processes and history of the site of Fort Beausejour. The range of soil textures encountered during the excavations suggested that the soils might be of glacial origin and an attempt was made to determine the validity of this possibility.

The following discussion is attemped for several reasons: apparently there has, thus far, been no attempt to interpret the depositional methods and soil forming processes at this site; it is felt that such will have to be done at the time of complete interpretation of the site, and simply because the present writer felt it was important to his research to find out these things. The discussion is not intended to be an exhaustive investigation of the geomorphology of the site, but is

designed to answer certain fundamental questions about the soils.

The general soil morphology of the Beausejour Ridge indicates the characteristics of a general glacial environment. Work conducted on the American side of the international boundary demonstrates probable Quaternary relationships for southern New Brunswick and adjacent areas of Maine. The presence of the international boundary has unfortunately been used as a convenient stopping point for Quaternary research in this general area. Even so, that the Quaternary history of New England is nearly entirely glacial will be demonstrated also for adjacent areas of Canada, including the general area of the Beausejour Ridge (Schafer and Hartshorn 1965: 113-128; Thornbury 1965a: 152-158).

Although the glacial history of New England is sketchy, there is no area of New England which escaped glaciation, although none of the tills of glacial deposits can be shown to be older than the Wisconsin Glacial Stage (Thornbury 1965a: 154). The deglaciation of Maine during the Wisconsin shows that the disappearance of the ice-sheet was generally marked

by development of a marginal zone of dead ice. The presence of dead ice is a prime condition for the development of such glacial environmental features as eskers and kame terraces (Thornbury 1965b: 394-396; Schafer and Hartshorn 1965: 123). Preliminary indications from the Beausejour Ridge indicate that it may be partially of such origin, although the ridge does contain a limestone strata which can be seen exposed at some points (Swannack 1969).

The Chignecto Ithmus probably falls into the section defined by Thornbury (1965a) as the "Seaboard Lowland". This type of topography and geomorphic history seem to be sufficiently different from that of the adjacent New England Upland and probably for the New Brunswick Upland as well. The width of this "lowland" varies from as little as six miles in Connecticut to as much as sixty miles near the Maine-New Brunswick boundary.

It is felt that the Beasuejour Ridge should be accepted as being a part of an area which was extensively affected by glaciation, although no specific sources were found for this area of New Brunswick. The following discussion of soils

hopefully will support the previous statements.

The basic soil of the site reflects the general properties of a glacial till. These properties include: "one outstanding feature of till is its physical heterogeneity. There is no size assortment and no stratification. The bulk of the material usually is of clay, silt, or sand sizes, but pebbles and huge boulders may be present" (Thornbury 1965b: 286). Another definition from Butzer (1964: 101): "Characteristics of a glacial bed proper are lack of horizontal bedding or stratification, and an absence of sorting according to size of the heterogeneous soil products, sand, gravel, and boulders that constitute the till."

The undisturbed soil profile (in what we have seen of it) of the Beausejour Ridge displays a marked lack of stratigraphic sorting. The basic matrix of the soil is a variable silt, clay or sand with random pebbles and boulders within it. This is often called a "clay" in field notes, etc., but this term should not in most cases be applied to these soils (as a descriptive term), except in some cases of reworking (i.e: cultural deposits). The color range of this soil

varies but could basically be described as a yellowish-red.

It is very strongly put forward that the parent soil of the Beausejour Ridge at the site of Fort Beausejour is a glacial till probably associated with the Wisconsin Glacial Stage. Tills are recognized from the St. Johns Region of New Brunswick (Alcock 1938: 42-43), which lends support to this view. The soils of Nova Scotia are developed from glacial "drift" (MacDougall, Cann, and Hilchey 1963: 50). Other sources for the discussion of the soils in neighboring Nova Scotia which point out these glacially derived soils are Cann and Hilchey 1959: also nos. 8,10, and 12 of the same series, especially no. 2 which deals with Cumberland County, Nova Scotia which includes territory within one mile of Fort Beausejour.

In additon to the basic till of the site and its culturally and naturally reworked states, there is another soil unit which needs to be described. Overlying most all of the site and underlying the sod is a layer of light brownish soil best referred to as a "silty loam" or similar designation. This material was very well revealed in the excavations by

Gerard Gusset in the south ravelin of the fort (see Gusset 1968). The soil unit displays a marked stability and angularity of particles. The view is put forward that this soil is probably a derivative of a peri-glacial environment and will reflect many characteristics of a loess. Loess is defined by Butzer (1964: 194-95) as "a pale yellowish unstratified silty sand, rich in vertical capillary structures." Loess is demonstrated by him as being of two types: periglacial and desert (also Thronbury 1965b: 312-314). It is felt that this component usually defined as the topsoil of the site is either a re-worked till-derived soil or is a recently deposited loess-like soil. If the previous comment sounds "out-of-line", then support will be garnered from Hickox (1962: 31) who sees the possibility of a slow loess deposition today (in the Central Annapolis Valley of Nova Scotia), although most was deposited shortly after glaciation. The loess observed in this area is described as "silty, structureless, buff-colored and homogeneous. It is slightly thicker in depressions and on the eastern flanks of ridges than on hill-tops. It therefore modifies, very slightly, the topographic irregularities of the underlying drift" (Hickox 1962: 31). It is felt that this evidence is sufficient for

anyone familiar with Fort Beausejour to see the correlation and possible significance of this last quote. It is felt that a significant contribution could be made to the environmental knowledge of the area by a few simple tests and correlations in this subject of interest.

In summary, it is said of the soil of Nova Scotia (taken here as applicable to the areas of the present discussion) "have generally been derived from the bedrock on which they rest by a process which started with the disturbance of the weathered surfaces to form a mantle of glacial drift, with little transport, followed by weathering of the glacial materials to form soils (Cameron 1961: 113).

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Table 1

BASIC LOT-LAYER CORRELATION

Layer Reference No.	Layer Description	Layer Significance	Lots Designated
* I I I	SOD	Post-occupation to Present Time	2E25A1,B1,C1,D1,E1,F1, G1,H1,J1,K1,L1,M1,N1, P1,Q1
	Topsoil		2E25A2,B2,C2,D2,E2,F2, G2,H2,H3,J2,K1,L1,M1, N1,P1,Q1
* I I	Fill From Curtain	Related to Occupation and Post-occupation	2E25A3,B3,C3,D3,E3,F3, F7,H3,L2, M2,N1,P1,Q1
* I	Occupational Deposits	Related to Direct Occupation and Previously	2E25A4,B4,B5,C4,C5,D4, E4,F4,F5,F6,F7,G3,H4, H5,J3,J4,J5,J6,J7,K2, L3,L4,M3,N2,P2,Q2,A5, G4

*(consult soil profiles)

Table 2

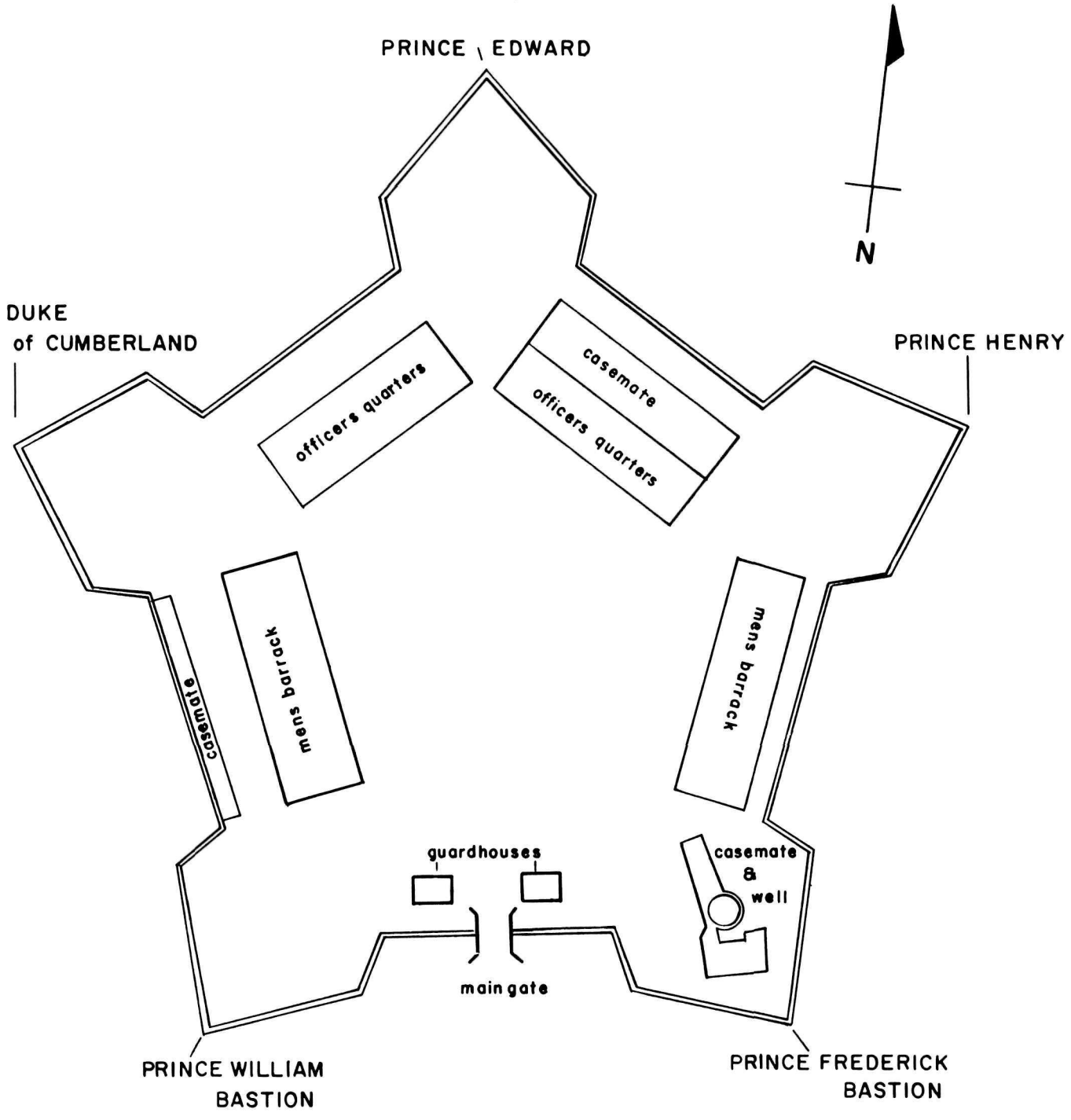
GENERAL TEMPORAL TO SPACIAL PROVENIENCES

Temporal Placement	Structural Exterior	Structural Interior	Structure Floor
Period of Occupation and Period of Destruction	F3,F4, F7, G2,G3, K1, M2,N1, P1,	B3,B4, C3 D3,E3, J4 Q2	
*Probable Period of Direct Occupation of Structure (1756-1812?)	F5,F6, F7, G3,H4, H5, J6,K2, L3, L4,M3, N2, P1,P2, H3, J6,J7, F5, F6	A4,C4, J5, J7,B4, Q2	B4,B5, C5, D4, E4

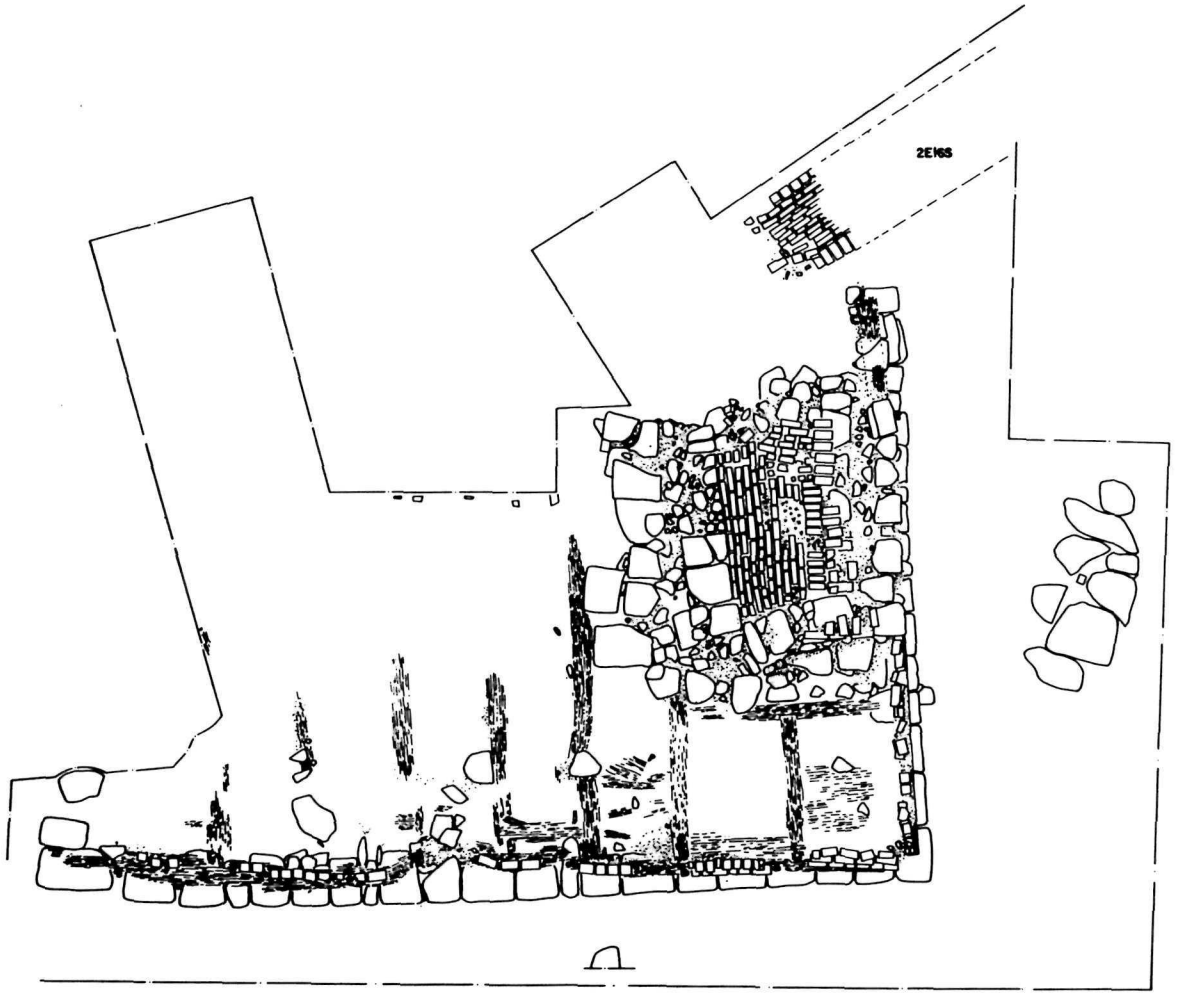
*based on preliminary interpretation only

1. Generalized Plan of Major Structures circa 1756-1800 (2E-68-102-23)

FIG. I



FORT BEAUSEJOUR N.B. SITE 2E
GENERALIZED PLAN with MAJOR STRUCTURES CIRCA 1756-1800
no scale



ARBITRARY NORTH

N

FORT BEAUSEJOUR N.B. SITE 2E

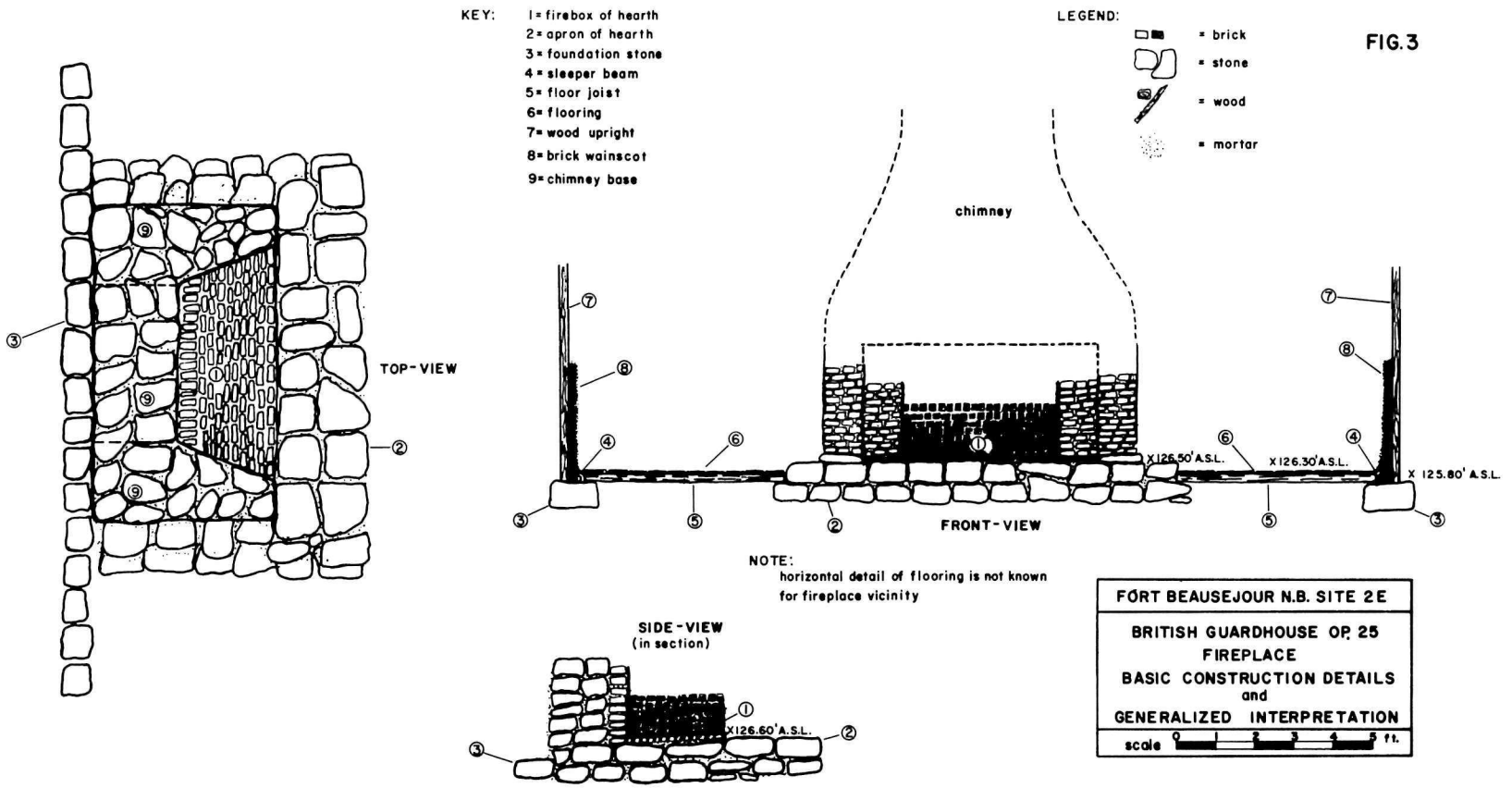
BRITISH GUARDHOUSE
OPERATION 2E25

0 1 2 3 4 5 FT.

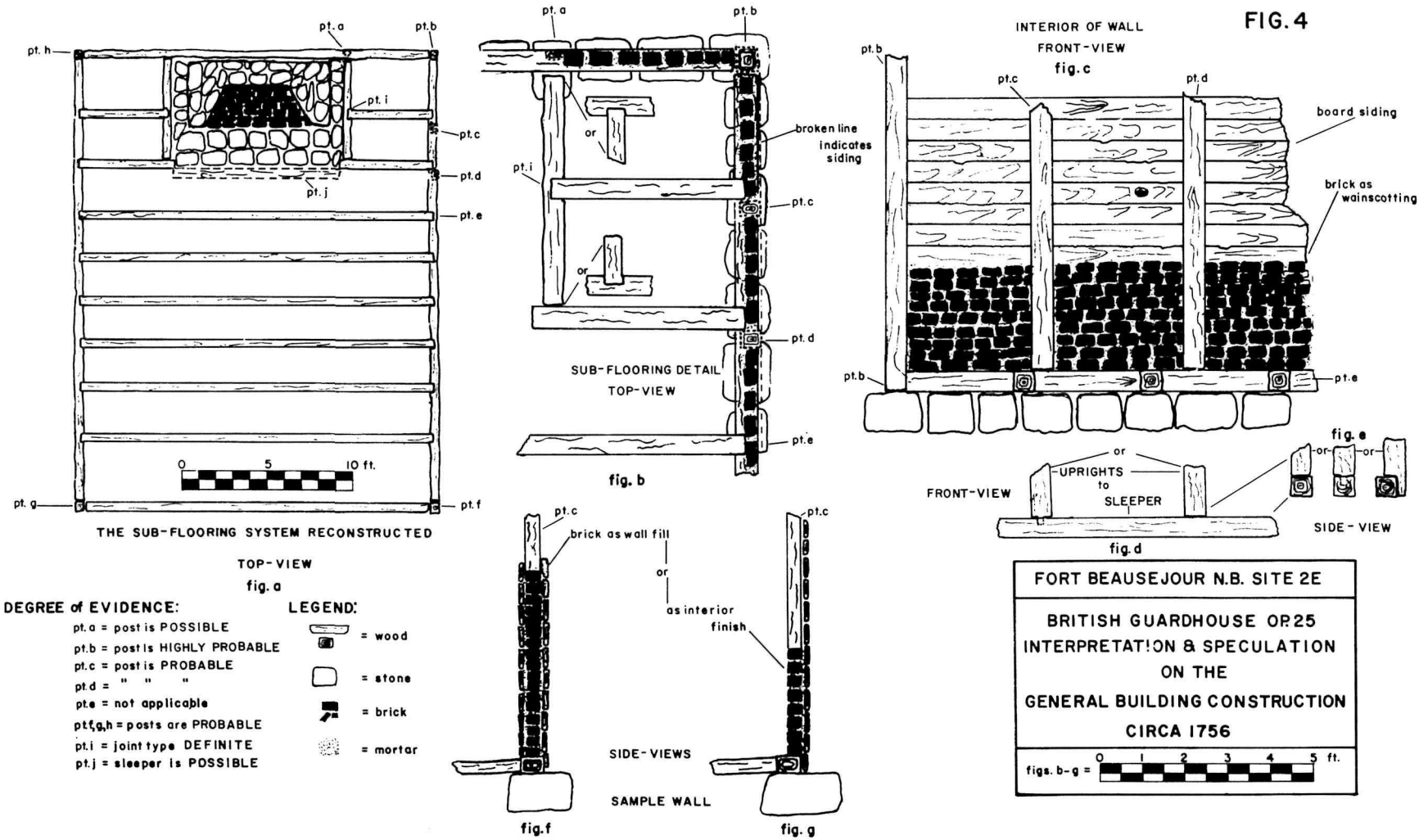
LEGEND

DECAYED WOOD
BRICK
POST
ROCK
MORTAR
EXCAVATION LIMIT

2 2E25 "As Found" Post-excavation Plan of British Guardhouse (2E-68-102-4)



3 2E25 Interpretive Plan of Basic Fireplace Construction (2E-68-104-5)



4 2E25 Interpretive Plan of General Building Construction (2E-68-104-4)

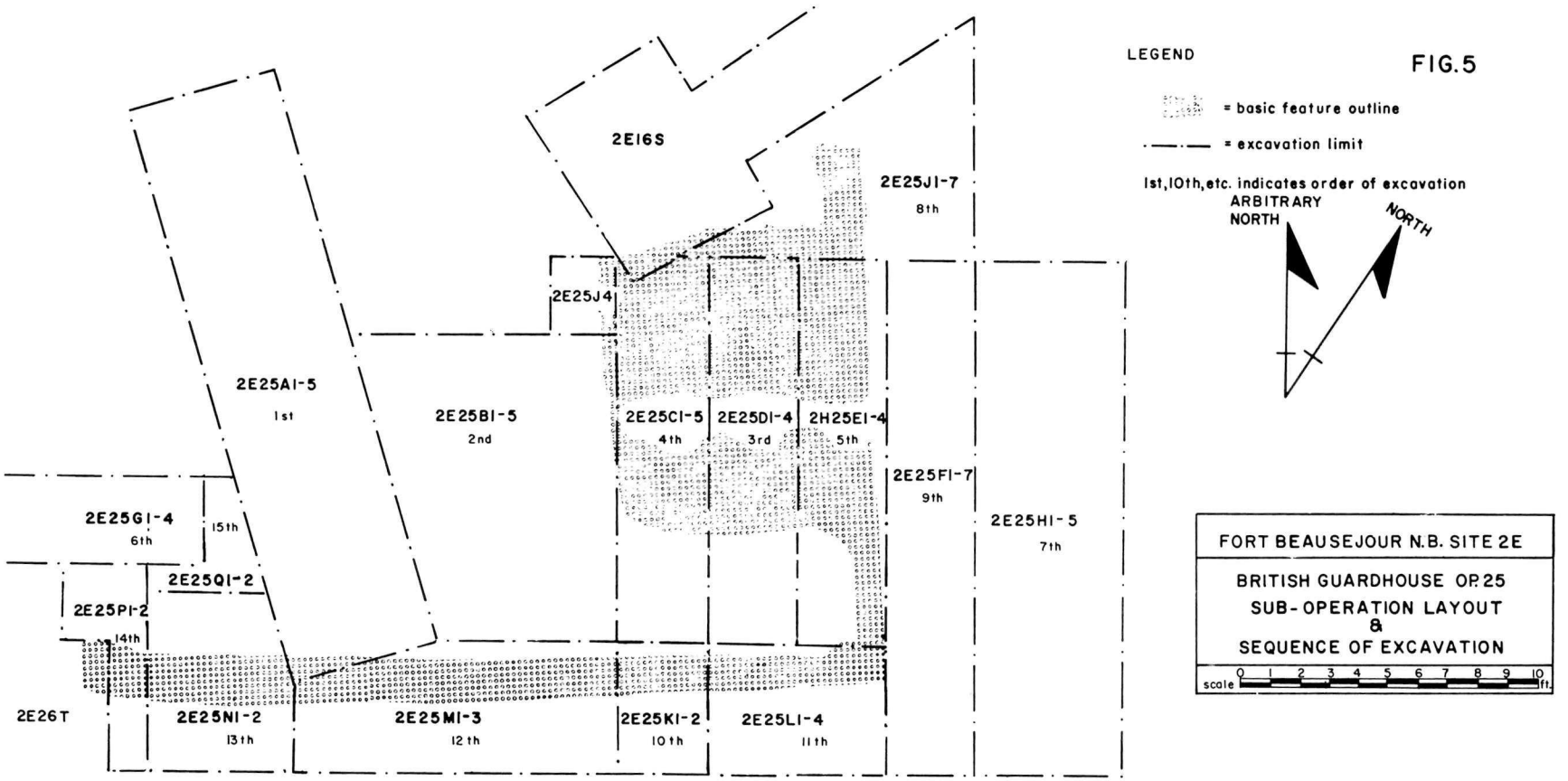
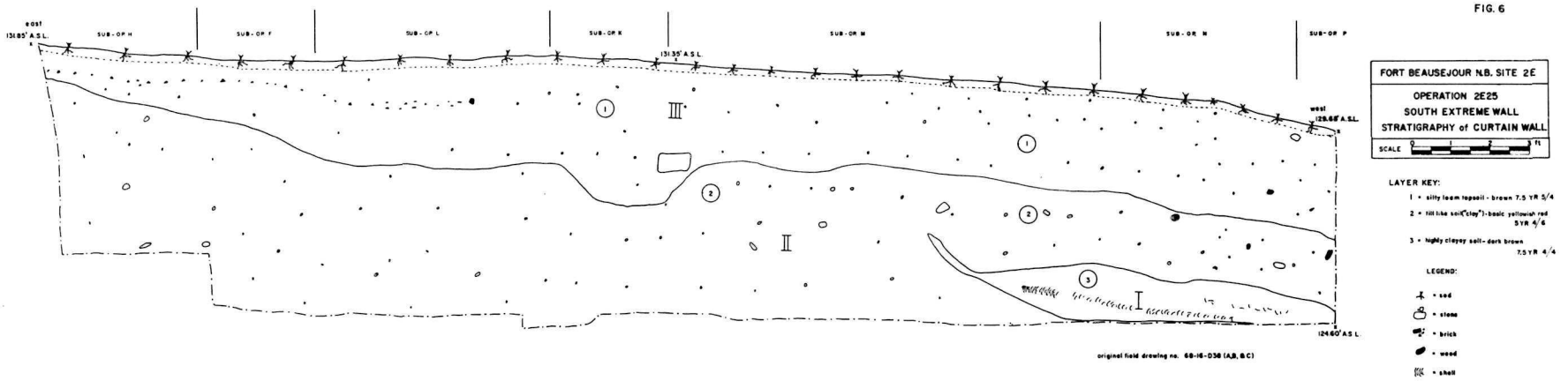
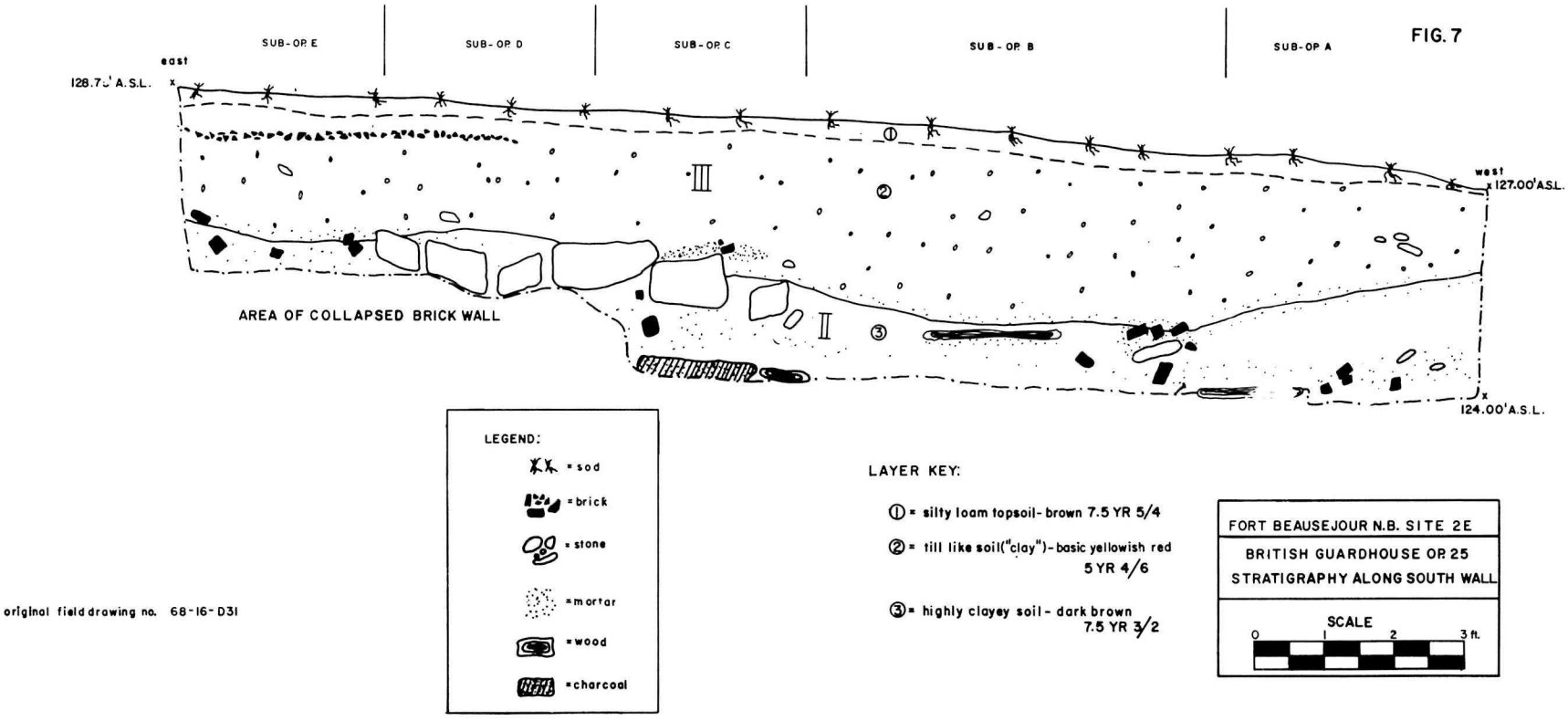


FIG.5

5 2E25 Sub-operation Layout and Sequence of Excavations (2e-68-102-24)

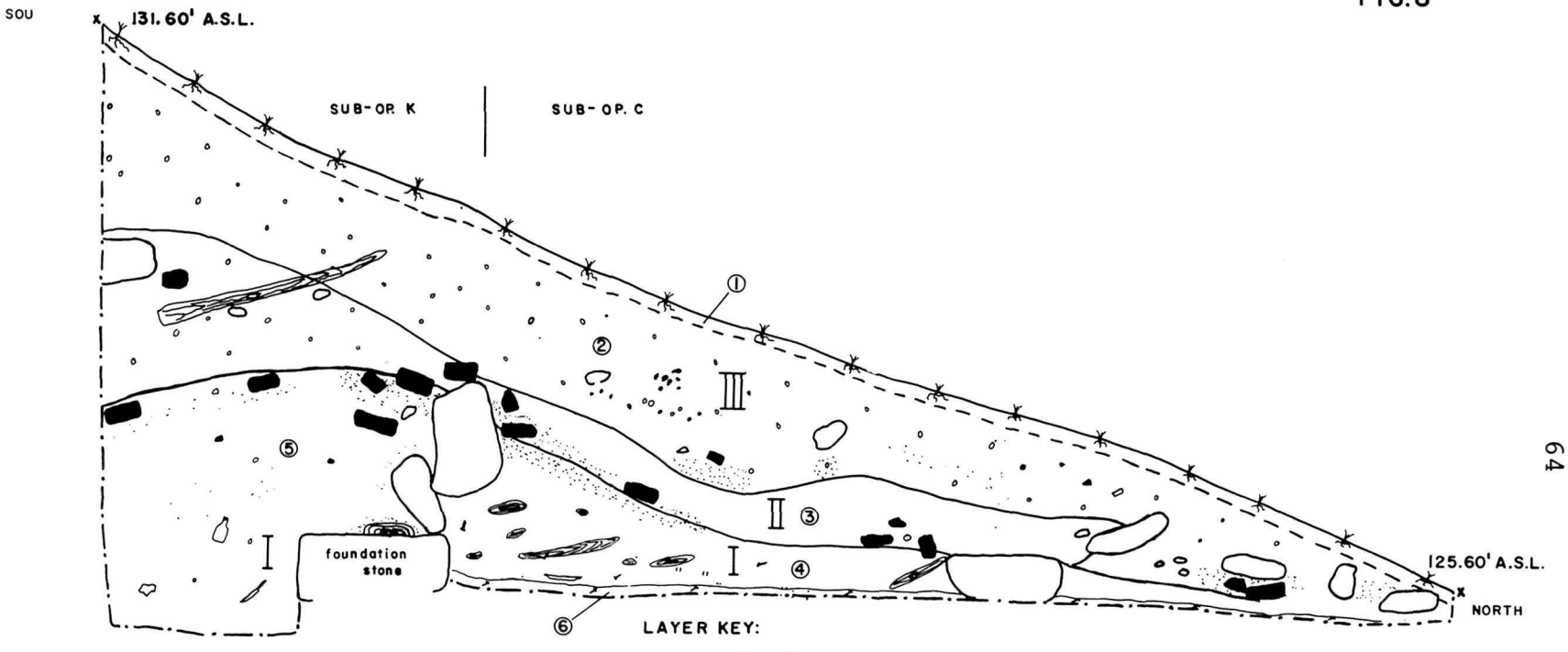


6 2E25 Stratigraphy of South Extreme Wall and of Curtain (2E-68-102-26)



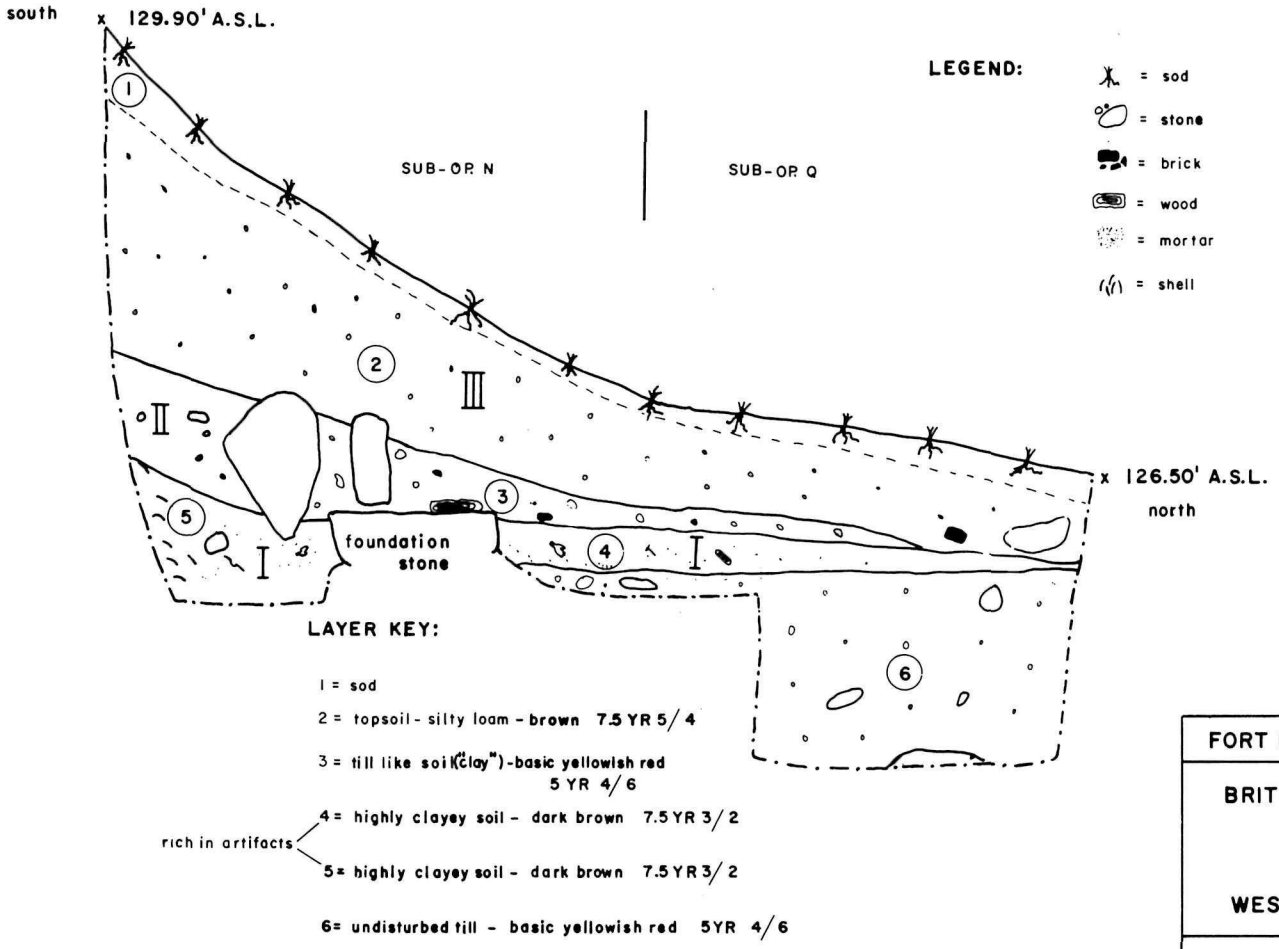
7 2E25 Stratigraphy of South Wall of Guardhouse (2E-68-102-21)

FIG.8



8 2E25 Stratigraphy Across Center of Guardhouse
(2E-68-102-22)

FIG.9



FORT BEAUSEJOUR N.B. SITE 2E

BRITISH GUARDHOUSE OP. 25

STRATIGRAPHY

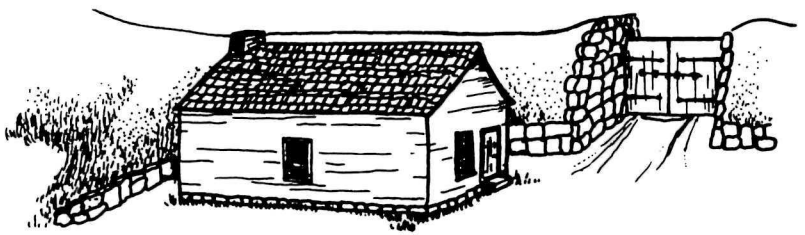
along

WEST STRUCTURAL EXTREME

SCALE 0 1 2 ft.

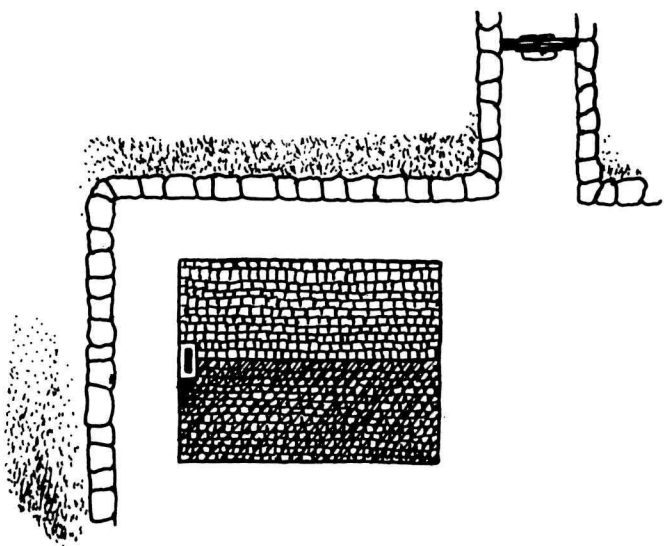
9 2E25 Stratigraphy Across the West End of Structure (2E-68-102-25)

Figure 10 Hypothetical Reconstruction of Guardhouse and Associated Features (2E-68-104-3)



view to southeast

view to east



top view

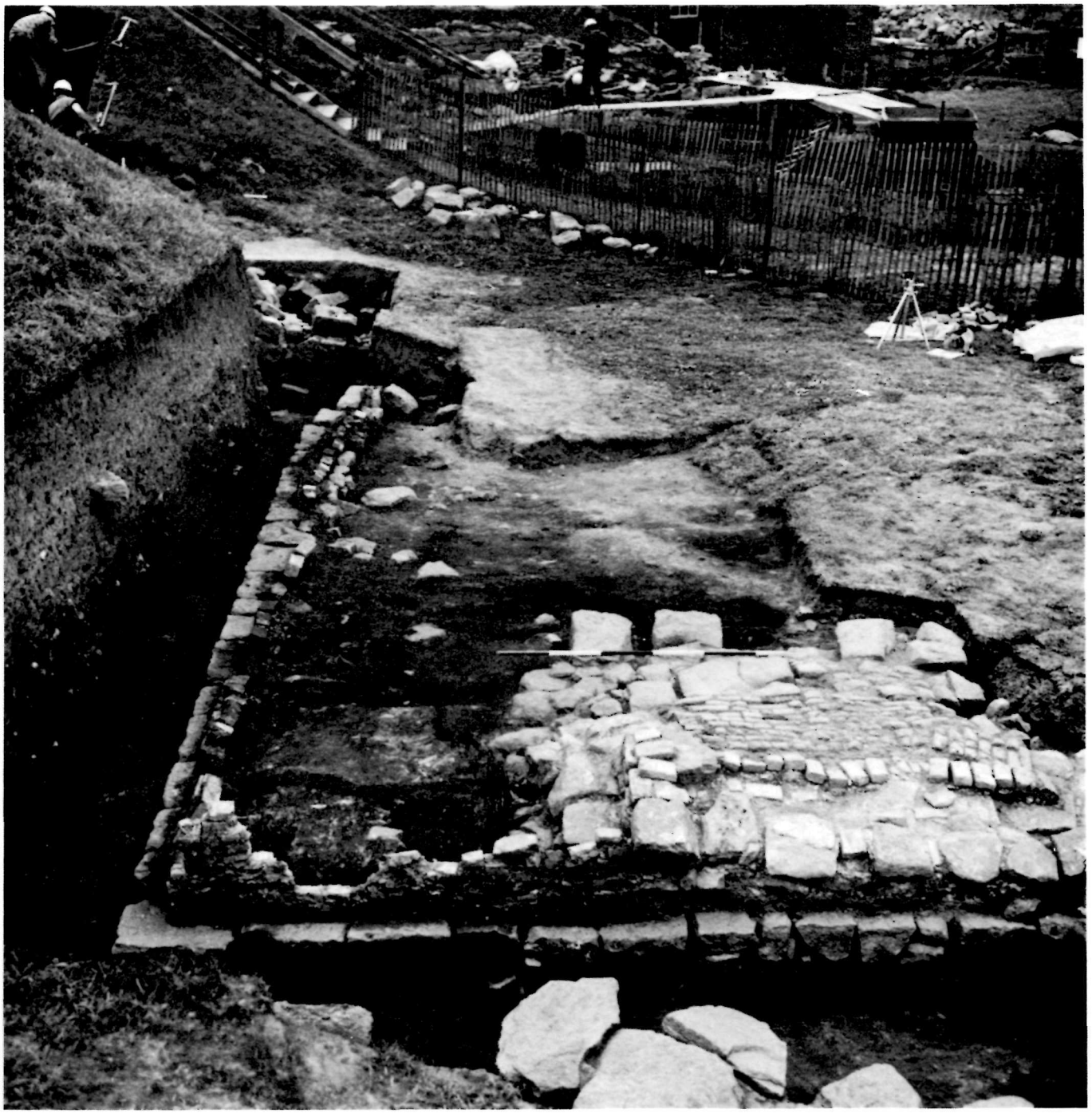
FORT BEAUSEJOUR N.B. SITE 2E

THE BRITISH GUARDHOUSE
HYPOTHETICAL RECONSTRUCTION
CIRCA 1756-1793

approximate scale 0 10 20 30 40 ft.

FIG. 10

11 Progress Photo of Excavation Showing
Relative Postion of Excavation 2E25
(2E-3017-X)



12 2E25 Post-Excavation Photo
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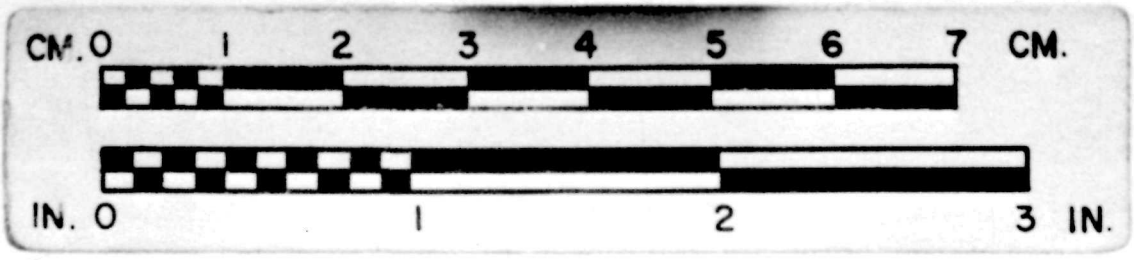

18 Photo of Mortar Sample Illustrating Wood Grain Impressions

Excavation of Drainage System at Fort Beausejour

by Anne Zeller

Abstract

In the 1968 field season at Fort Beausejour five wooden drains connected in a system running along three sides of the pentagonal parade square were excavated. They drained British built structures and so may have been laid by the British, although not all at the same time, as can be determined from details of their construction. Two more drains were excavated at the entrance to the northwest bastion (Prince Edward Bastion 2E11), one wood and the other stone. Because the stone drain ran from the French Powder Magazine in Bastion 2E11 to where it was cut off by wood drain #6, it was probably a French stone drain.

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PREFACE

The material in this report was gained from excavation at Fort Beausejour between June 3 and August 26, 1968.

The labourers who worked with me during the summer were:

Alfred Anderson

Bobby Burke

Bruce Davis

Willis Goodwin

Douglas Jones

Charles King

Buck Landry

Albert Legere

David Legere

Eric Wheaton

I would like to acknowledge the help and supervision that I received from Jervis Swannack and DiAnn Herst during the course of my work this summer.

Introduction

There had been no previous study of the drainage system of Fort Beausejour, although separate drains in 2E17, 2E13, and 2E19 were examined previously (Macdonald 1967; Herst 1967). This study is a small part of the project of the excavation of Fort Beausejour but it is closely connected with many different operations (Fig. 1):

2E18 Duke of Cumberland Bastion - French Casemate

2E17 Barracks

2E11 Prince Edward Bastion - French Powder Magazine

2E12 British Casemate

2E19 Officers' Barracks

2E16 Barracks and Storehouse

2E22 Prince William Bastion

2E23 Parade square

2E13 Prince Henry Bastion - French Casemate

The drains were numbered in the order in which they were excavated.

Aim.

The problems which the excavation of the drainage system attempted to solve were: who built the wooden drainage system; where did it run; and to examine the details of its construction. Originally only those drains found on the parade square (2E23) were under study, but this project was later expanded to include the two drains at the entrance to Prince Edward Bastion (2E11).

Technique.

In order to excavate the drains as quickly as possible work was begun at both ends. The direction of the drain was extrapolated from the part

that had been uncovered and two trenches were dug at right angles to the suspected line of the drain, one at each end. When the drain had been discovered in the bottom of these, trenches were dug to expose long sections of drain. Several of these long trenches were required to uncover the whole drain. Two foot balks were left between them for stratigraphic study.

The presence of a modern shelter over 2E16 and its adjacent brick walk prevented excavation of a short section (12') at the east end of drain #3.

A section of drain #5 was re-excavated at the bottom of 2E16U5 where it had been discovered in 1968 (Korvemaker 1967). About .5' to the east of drain #5, and parallel to it, ran the exterior west stone foundation wall of 2E16. On the west side of the drain at surface level was a brick pavement, which was to be preserved as much as possible. Therefore only three short trenches, 2E16U6, 2E16U7, and 2E16U8, were excavated along the line of drain #5. One trench, 2E23H2, was dug north of the 2E16 shed, directly on the line of drain #5, but found nothing because the drain did not extend that far north. Two trenches 2E23H1, and 2E23H3, were dug south of 2E16, right through the brick pavement there (which was in very poor condition) and here the south end of drain #5 was found.

Because most of the drains were an average of 6' below surface level, picks and shovels were used to remove most of the overburden, and brushes and trowels to clear the drains once they were finally exposed. Most of the overburden over drains #6 and #7 had already been removed (Gusset 1968). A representative level for drains #6 and #7 was 121.28' A.S.L. while a representative level for drain #1 would be 120.00' A.S.L.

The drains were mainly concentrated in Operation 2E23, the parade square; however, some of them extended into operations 2E12, 2E16, 2E17, and 2E19 (Fig. 1; Table 1). The suboperations and lots used in locating and exposing these drains were as follows:

Drain #1: 2E23A lots 1-7
2E19D lots 6-15
2E17K lot 7

Drain #2: 2E19D lots 4-15

Drain #3: 2E23C lots 1-27

Drain #4: 2E23F lots 1-4
2E23D lots 1-19

Drain #5: 2E16U lots 5-8
2E23H lots 1-3

Drain #6: 2E12D lots 4-5

Drain #7: 2E12A lots 8-10

Other lots were dug both in searching for the drains and in excavating a stone wall found at the south end of drain #4:

Lots to excavate stone wall: 2E23J lots 1-4

Lots dug attempting to find drains: 2E16S lots 3-5
2E23E lots 1-4
2E23G lots 1-3

Description of features.

General: Systems

Drains 1-5 formed a connected system to carry water away from buildings on the west, north, and northeast sides of the parade square. Water flowed from Drain #5 which drained the west exterior foundation wall of 2E16, into drain #3, which carried it west about 106' to drain # 1. Here it joined the drainage water flowing south in drains #1 and #2. After drains #2 and #3 joined drain #1 all the water flowed south toward drain #4.

The north end of drain #4 runs east-west for 12' from the east wall of 2E17, then turns south, extending for 28.4'. Drain #1 runs toward the point where Drain #4 turns south, but was rotted away and did not actually join up with Drain #4. It is not clear what happens to the water after it enters drain #4 because the south end of the drain is completly rotted away. However soil stains indicate that it probably extended south to, or close to the British curtain wall (Sauerbrunn 1962) that once ran between Duke of Cumberland Bastion, 2E18, and Prince William Bastion, 2E22 (Fig. 1). However, the presence of a drain in the casemate built against the south curtain wall (Sauerbrunn 1962) is mentioned in the Historical Report (Nadon 1966). A straight line extrapolated from Drain #4 would meet the new cement drain hole in 1962. However if the cement drain hole which was put there in 1962 was installed directly over the part of the brick drain found by Sauerbrunn, drain #4 might have been connected with this brick drain.

General Description

The drains themselves were rectangular in cross section and made of four planks; one bottom board, 2 side boards, and a top board. These boards were dressed planks, except for the top boards of drain #4 which were split logs with the bark still on them.

There was liberal use of iron nails to hold the sides and bottom of the drain together and nail the top down. They were hand wrought iron nails with rose-head heads and square shanks. The most complete ones were found in drain #3, .4' long and pointed at the tip. Fragments and traces of nails were also found in drains #1, #2, and #4.

Drain #6 was different from the others because neither a bottom board nor nails were found in it. The top board consisted of long narrow fragmentary pieces of wood. From the west entrance to the British casemate 2E12, this drain extended southwest for 20' to the north wall of 2E17. Drain #6 was intersected 13.4' from its NE end by drain #7, which was a stone drain running out of 2E11. Because drain #7 curved to the west from its southeasterly course, the angle of intersection of these two drains was about 70 degrees.

Drain #1

General

The north end of drain #1 had been revealed in 1967 (Herst 1969). It ran out of the bottom of the north wall of 2E19 which has been designated the North Stone Wall. The opening for the drain was 19.5' from the west end of the wall, and the drain at this point had an elevation of 120.65' A.S.L. From here the drain had been exposed where it ran for 28' southwest across the floor of 2E19 to the exterior south foundation wall.

When drain #1 was entirely excavated the elevation of the north end was 120.65' A.S.L. and of the southern of section #1 was 118.99' A.S.L. giving a slope of 1.66' over the total 82.9' length of the drain. The portion of drain #1 with which this report deals is that part exterior to the south wall of 2E19. For convenience of description the drains have been divided into several sections according to the length of the bottom boards and numbered from south to north (Fig. 2).

The elevation of the north end of section #6, measured inside the drain, was 120.00' A.S.L., and of the south end of section #1, 118.99' A.S.L. Thus the total slope of the drain was 1.01' over its 54.4' length. The average slope between one point of measurement and the next, a distance of about 5', was .06' A.S.L. (Table 5). The northernmost 23.5' which comprised sections #5 and #6 of drain #1 was the best preserved portion, with the top boards side boards, and bottom boards still intact, in position, and very solid. This may have been because the water went through them very quickly, and did not have a chance to remain in the drain and rot it. It was also noticed during digging that where the drains were embedded in a heavy wet red clay, usually 7.5YR 4/3, the preservation of the wood was very good. This was the type of soil found around drain #1, sections #5 and #6. As the drain extended farther south through sections #1 to #4 the preservation of the wood became poorer. In section #4 the side boards were still present, although very badly rotted, but they had been driven together by pressure from outside, so that there was very little space (about .1') left between them. The side boards of this section (#4) and those of sections #2 and #3 had been set with their edges resting on top of the bottom board, so that it was possible for them to be driven together from the sides and still remain vertical. A few broken bits of the top board remained for the north 4.8' of section #4. The remaining 12' of section #4 had no traces of top board, nor did the sections farther south. The side boards were more and more fragmentary as excavation proceeded towards the south, until there were no traces of them left in section #1, the southernmost section.

The preservation of wood as an entity stopped at the south end of section #1 but a soil stain extended 3.8' south toward drain #4, but not reaching it.

The poor preservation of the south end of drain #1 may be due to three factors. First, even if drain #1 joined drain #4, if there was any congestion, water may have backed up here and remained long enough to rot drain #1. Drain #1 would then have become blocked with earth and the water would have backed farther and farther up the drain. Second, the type of soil most commonly noted in connection with poor preservation of wood in digging the drains in 1968 was a wet brownish black loam 7.5YR 3/2 dark brown. This seemed to be the most commonly used material for filling in the original drain trenches in the south part of the fort. This is expecially evident in the south wall of 2E17K7, where the drain trench stands out clearly in the stratigraphy. The third reason is a hypotheses based on details of construction. Drain #2 has the same type of construction, with the bottom edges of the side boards resting on the bottom boards, as the first four sections of drain #1. But sections #5 and #6 of drain #1 are constructed differently with the side boards extending down beside the bottom boards. Also drain #2 was completely cut off by the south end of section #5 of drain #1.

During the excavation of drain #1 two concentrations of small stones and broken brick were found in the soil above the line of the drain. The The northernmost concentration was found in lot 2E19D7 at 122.13' A.S.L. This conglomeration was 3' N-S measurement and 2' E-W measurement. It looked to be just fill thrown into the original drain trench. The other concentration in 2E23A2 was 7.6' N-S measurement and 3' E-W measurement, 6.4' north of the south end of the lot.

Drain #1, Section #1.

Section #1 was the southernmost wooden portion of drain #1 remaining. There was soil stain 3.8' long and .7' wide extending south of section #1 toward but not actually reaching drain #4 at the point where it turns to the south.

The southernmost of the two pieces of wood comprising section #1 of drain #1 was 4.2' long, .95' wide and .12' thick. It was the remains of the bottom board of the drain. The southern end of it was quite rotten, which corresponds with the fact that farther south only soil stain was left. This piece was separated from the northern piece in this section where it had been cut with a saw in 1967, when 2E17K7 was excavated and the board was found in the bottom. It had been cut to search for something underneath it, but nothing was found (Macdonald 1967).

The northernmost of the two sections of board in section #1 had been entirely removed when it was cut through in 1967. It was left in the hole however, lying in an east west direction at an angle of about 30 degrees with the west end lower. It was 3.8' long .9' wide and .12' thick. The piece remaining did not exactly fit across the gap left, but part of it may have been destroyed. There were no nails or traces of nails found in this section.

Drain #1, Section #2.

This section ran from lot 2E17K7 through lot 2E23A7, and into 2E23A4. The length of the section was set by the length of the bottom board, which was 9.5' long. This bottom board was .78' wide and .12' thick,

with traces of six nails driven up from the bottom through it, where the side boards would have been. The side boards were, however in very poor condition and pushed together in the center of the bottom board by pressure from outside as described for section #4. The west side board was too badly fragmented to be able to ascertain its length when excavated, but probably had been originally the same length as the bottom board. It was .38' wide, .11' thick, and had the remains of one nail in it. The east side board was also too broken for the length to be measured, but was probably almost the same length as the other. It was .35' wide, .12' thick, and had no nail remains in it. There were no traces of the top board left in this section.

Drain #1, Section #3.

This was a very short section in lot 2E23A4, extending from the north end of section #2 to where drain #1 made a turn of about 30 degrees. The bottom board of this section was 2.05' long, .80' wide, .13' thick, and contained four nail fragments. The rest of the boards comprising this section were too badly fragmented for any measurements to be taken. The side boards had again been pushed in towards the centre of the bottom board so that they stood with a decided lean to the east, with a .1' space between them. Of the top board there was no trace.

Drain #1, Section #4.

This section runs along the bottom of 2E23A4 from the turn in drain #1 where section #3 ended to where drain #1 is joined by drain #2. The bottom board was 20.0' long, .83' wide and .15' thick, with sixteen nail

fragments driven up through the bottom along the edges where the side boards originally were. The side boards were, however, pushed together to the centre of the bottom board with a mud-filled space about .1' wide between them. The west side board was 19.8' long, .48' wide and .16' thick, with five nail fragments in it. The east side board was 19.3' long, .46' wide, and .14' thick, with the remains of six nails in it. Some nail fragments were the remains of those which had been driven up through the bottom board into the side board, and some were remains of nails which had been used to hold the top board down. The top board still remained over the northmost 4.8' of this section but it was very soft and crumbled away when earth was removed from around it. It was about 1' wide, but no accurate thickness measurement could be taken.

Drain #1, Sections #1 - #4. General.

Up to this point, through sections #1 to #4 there was no evidence of crosspieces in the drain to hold the side walls steady. Also the side boards rested with their lower edges on top of the bottom boards (Fig. 4). These factors may be part of the reason that the side walls were driven together. The ends of the bottom boards butted squarely, but did not overlap and were not joined in any way. The first four sections of drain #1 are similar in construction to Drain #2 and different from #5 and #6 of Drain #1. In view of this, Drain #2 and the first four sections of Drain #1 may have been built at the same time, with sections #5 and #6 of drain #1 being a later addition. However sections #1 through #4 will still be called part of drain #1 because they formed a functional unit with the northern section after it had been laid down.

Drain #1, Section #5 and #6. General.

In these sections the method of construction or the drain differs from that observed farther south. The bottom board is inserted between the two side walls with its lower surface level with their bottom edges. The bottom boards are as a consequence much narrower than those in sections #1 to #4 (Fig. 4b).

The joint between the bottom boards of sections #5 and #6 is much more complex than the simple square cut ends found in sections #1 to #4. The board from section #5 had a piece cut out from underneath the end to make a bevelled, overlapping end, and that from section #6 had a slanting piece removed from the top surface so that the boards overlapped, fitting snugly. The underneath board (from section #6) had flanges left on the sides to grip the board from section #5 securing it so that it would not shift. No nails were used in this joint but it held very firmly (Fig.4f).

There were places for six crosspieces in the side walls of these two sections of drain #1: three in each section. All but one were in place, and the one missing from section #6 was found inside the drain when that section was excavated. These lay across the width of the drain recessed into the side walls so that the top could fit snugly. These crosspieces were usually held in place by a nail driven into one or both ends and down into the side boards. On an average they were .82' long; .14' wide in section #5, and .21' wide in section #6; and .06' thick (Table 2).

Drain #1, Section #5.

The bottom board of this section was 12.7' long, .45' wide, and .17' thick. The eight nails in it were in quite good condition, and had been driven

into the bottom board through the side boards, four on each side, horizontally to the ground. The west side board was 12.6' long, .55' wide and .14' thick. There were four nails driven through this piece into the bottom board, two into the upper edge through the crosspieces and one into the upper edge through the top board. The east side board was 12.4' long, .7' wide and .15' thick, with the same kind of nail arrangement as in the west side board. There were three pair of notches about .07' deep cut into their upper edges, one of each pair in each side board, to accomodate the crosspieces. The top board was a little longer than the rest of the boards in this section, being 13.6' in lengh and extended south to cover the joint with drain #3. It was a heavy board, .92' in width, and .09' thick. There were two nails in it, one on the east side 4.4' from the south end of the board and .8' from the west side of the board; the other was 1.2' from the north end on the west side and .82' from the east edge. These nails were in the right position to be driven down into the side boards, as the top board overhung the side board by a distance of almost .1' on either side.

Drain #1, Section #6.

Section #6 was almost an exact replica of section #5 except for slight differences in the sizes of the boards, and positions of the nails and crosspieces. The bottom board was 12.6' long, .55' wide and .19' thick. There were twelve nails driven horizontally into the side of the bottom board, five on the west side and seven on the east. The west side board was 12.4' long, .7' wide, and .18' thick with five nails driven through it into the bottom board and one into the upper edge. The east side board was 12.5' long, .7' wide and .15' thick. There were the seven

previously mentioned horizontal nails along the bottom of this board, and three driven vertically into the top edge, one through the top board and two through the crosspieces. There were three pair of notches for crosspieces, the southernmost 2' from the south end, the middle one from which the crosspiece was missing, 4' north of the first, and the third ones 3.7' north of this. The first and third crosspieces in this section were held in place by a nail driven into the east side wall.

The top board was 13.4' long, 1.1' wide N. end, .75' wide S. end, and .12' thick. The southernmost nail was driven into it 3.0' from the south end, and the northern one, .7' from the north end.

The type of wood used in constructing the drains was not ascertained at the time of excavation, although it seemed to be a soft wood. Samples were taken for analysis.

Drain #2.

I believe that what has been discussed as sections #1 to #4 of drain #1 was originally part of drain #2 for the reasons outlined above: namely, similarities in details of construction, and the inutility of drain #2 if drain #1 had been completely present. However only the section from the grate in the west compound wall of 2E19 (Herst 1969), to where it is cut off by drain #1 will be considered part of drain #2 in this report. The entrance and grate of drain #2 had been discovered under the west compound wall of 2E19 in 1967 (Herst 1969). Drain #2 was excavated through lots 2E19D15, 11, 8, and 14, and was 20.3' long. The elevations went from 119.39' A.S.L. at the north end to 119.27' A.S.L. at the south

end giving a slope from north to south of .12'. The average slope between measurements which were taken about four feet apart was .02' (Table 3).

The side walls of the drain rested on edge on top of the bottom board of the drain. There were no crosspieces to hold them apart. There were, however, nails driven up from underneath the bottom board into the side boards. The preservation of the side and bottom boards was fairly good. They were embedded in the wet red clay, 7.5YR 4/3, which has been noted above in connection with good preservation. However the top board was fragmentary and had collapsed in the middle along its length, forming a V shape of broken pieces of wood.

Drain #2, Section #1.

The bottom board of this section was 20.3' long at its longest point. The south end had the east side cut off at an angle to form a close joint with drain #1, and the cut extended 3.5' back. The board was .86' wide where it had not been cut and .17' thick. There were thirteen nail fragments left in the board, some very badly rusted. At the north end it butted the next bottom board which ran under the west compound wall of 2E19 (Fig. 2).

The west side board was 20.0' long and extended right under the top board of section #5 of drain #1, to the outer side of the side board, forming a very close joint. Shrinkage of the wood had opened a space there however. There were three nail fragments in this board which originated from nails driven into the top board. The east side board

was 15.0' long, .43' wide and .13' thick, it was square cut on the south end and did not quite extend to drain #1. There were also three nail fragments in this board originating from nails driven into the top board.

The top board was, as mentioned, too badly fragmented for any measurements to be taken.

Drain #3.

General.

Drain #3 ran from a grate in 2E16V4 on the interior side of the west foundation wall of 2E16, E-W along the north side of the parade square for 106.5' (approximately) to where it joined with drain #1. It was excavated from the west end for 94.54' until it ran under the west wall of the 2E16 shed. It extended about 12' farther but was not excavated.

Drain #3 was the best preserved of all the drains. This was partly because it was found in wet reddish-brown clay, 7.5YR 4/3, which helped to preserve it as mentioned above and partly because the water probably passed very quickly through it.

The slope of the drain was from 119.77' A.S.L. at the east end of excavation to 119.14' A.S.L. at the juncture with drain #1. This gave a slope of .63' over the 94' excavated (Table 5).

The joint between drains #1 and #3 was carefully made and shows clearly that both drains were laid down at the same time. There was a space

left in the east side wall of drain #1 for water to enter from drain #3 (Figs. 4, 7). This joint was just below the juncture of drains #1 and #2 (Fig. 4e).

The grate over the east end of this drain was still in place when found in lot 2E16V4, and was given artifact number 2E16V4-1. It was made of copper sheeting, with holes punched in it. A round, blunt tipped instrument had been used to punch the metal from the front or outer side of the grate, and the bumps had been filed off. There were eight rows of holes; five rows of eight holes alternating with three rows of seven holes at the top. The grate itself was 1.07' in length, .8' wide and about .03' thick. The elevation of the upper edge of the grate was 121.04' A.S.L.

On top of the cover boards of the west half of drain #3 were twenty-eight stones in a row, at intervals of from .8' to 2'. These stones ranged from about .6' to 1.2' in length, and ranged from the very west end of the drain, (where the first three were removed, before it was discovered that there were more) about halfway to the east. They stopped for no apparent reason, and only one more was present during the rest of its length (Fig. 6).

Only the top boards were removed from drain #3 so not as many construction details and measurements are available for it as for drains #1 and #2. However it was built on the same plan as sections #5 and #6 of drain #1, with side boards flanking the bottom board, their lower edges level with the bottom of it.

There were also crosspieces present in this drain at intervals of from 6 to 7 feet. These crosspieces which lay across the width of the drain were .95' long, .3' wide and .12' thick. They were dovetailed to fit into notches which had been cut into the top edges of the side boards to hold them firm. No nails were used to hold these crosspieces down, in contrast to the thin undovetailed ones in drain #1 which had at least one nail in each.

The nails from drain #3 were in very good condition, about .4' long, and having square heads. However these were only the nails from the top boards of the drain, because the rest of the drain was not dismantled.

This drain was divided into seven sections numbered from 1 to 7, from west to east, with each top board representing a section. There were seven bottom boards also, each matched in length by the side boards running along it. Accurate measurements of the bottom and side boards were not taken at the time of excavation, and the following figures for their lengths have been calculated from scale drawing of drain #3 (Fig. 3). The width and the thickness of the side and bottom boards cannot be taken accurately from the scale drawing (Fig. 3) and have therefore not been included. The overall outside width of drain #3 was 1.1', and the inside width .85'.

Drain #3, Section #1.

Thus in section #1 the bottom and side boards were 13.8' long, while the top board was 14.9' long, 1.0' wide and .15' thick. It had four nails in it near the four corners of the board. A sample spacing of nails is given in the part on section #7 of drain #3. There were two crosspieces in this section of drain (Table 2).

Drain #3, Section #2.

The bottom and side boards were about 12.4' long in this section, while the top board was 13.6' long, 1.05' wide, .13' thick and had four nails in it. There were two crosspieces inthis section of drain (Table 2).

Drain #3, Section #3.

The bottom and side boards were 14.6' long in this section. The top board was 15.08' long, the longest one of the series, and was 1.2' wide and .15' thick. It also had four nails driven through from the top into the side boards. There were two crosspieces in this section (Table 2).

Drain #3, Section #4.

The bottom and side boards were 14.6' long, longer than the top board, which was 13.25' long. The top board was 1.00' wide, .14' thick, and had five nails in it. There were two crosspieces in this section.

Drain #3, Section #5.

The bottom and side boards were 12.8' long, and the top board was very short, being only 9.3' long. It was 1.08' wide and .14' thick with four nails in it near the corners. There were two crosspieces in this section of drain

Drain # 3, Section #6.

The length of the bottom and side pieces was 12.3'. The top board was 13.4' long, 1.05' wide, .15' thick, and had four nails in it. As usual, there were two crosspieces in this section (Table 2).

Drain #3, Section #7.

The bottom and the side pieces were about 14' long. They extended just under the west end of the next top board. This top board had not been completely excavated because the earth over it supported the west wall of the 2E16 shed. The top piece in section #7 was 15' long, .9' wide, .15' thick, and had four nails driven through it into the side pieces. The two nails in the west end of the next section were 2.0' on the north, and 2.05' on the south from the west end of the board. They were .75' apart across the board, and the wood was badly rotted and cracked around the nails. The two eastern nails of section #7 were on the north side .7', and the south side 2.0', from the east end of the board. The oxidizing of the nails affected the wood and the nail. The part of the nail embedded in the wood was quite sound.

Drain #3 was the only drain from which a good section joint description could be taken, other than for the joint between section #5 and #6 of drain #1. In drain #3 the top boards did not overlap but were cut approximately square and fit quite closely together. The joints between the top boards did not come at the same places as those between the side and bottom boards. The side boards were bevelled at the joints, with west one on the outside. This occurred on both the north and south sides of drain #3 (Fig. 4g). The same overlapping, but with the north side walls on the inside and the south side walls on the outside, occurs between sections #5 and #6 of drain #1. The side walls of the rest of drain #1 and drains #2 and #4 were too badly deteriorated to show whether or not this feature was present.

The bottom boards of the joint between sections #5 and #6 of drain #1 were bevelled with the north board under the south. Because of the similarity in construction detail between these sections of drain #1 and drain #3, it is possible that the side and bottom boards of drain #3 were also bevelled and overlapped (Fig. 4g).

Drain #4.

General.

Drain #4 has been divided into three sections for convenience of description, with the numbering starting from the south. Sections #1 and #2 ran in a north-south direction for 24.8'. Section #3 was 12' long and ran east-west, from the southeast corner of 2E17, east to the joint with section #2, which formed an angle of about 120 degrees. At this joint there were two funnel pieces, one on each side to help direct the water into the channel of the drain.

Drain #4 was built in the same manner as drain #2 with the lower edges of the side boards on top of the bottom board. In fact there was about .05' of bottom board extending outside the outer edge of the side board. In section #3 the total width of the drain was .9', while the width of the channel was .45'. The top boards of drain #4 were not dressed planks, but split logs, flat side down with the bark left on the top side. These top boards did not overhang the side boards, as was common on the other drains, but covered only about half of the top edge of the side board, leaving .05' to .1' of the edge uncovered.

The slope of this drain is difficult to interpret because the elevation figures show a very slight slope toward 2E17, that is from south to north, but this does not seem reasonable because the function of a drain is to lead water away from the foundations and basement of a building. However it may be that drain #4 connected in some way with the stone drain running out of the southeast corner of 2E17, shown on Franquet's plan. The bottom boards of the south end of the drain may have been shifted before elevations were taken, because the slope of the drain was only .07' over the length of the drain. The elevation of the farthest west point in drain #4 where the bottom board could be reached, six feet from the west end, was 117.53' A.S.L., while the elevation at the south end of section #1 was 117.60' A.S.L. (Table 5).

The preservation of drain #4 was not very good for the most part. The western six feet of section #3 had the top, side, and bottom boards well preserved, with the bark still left on the top board. However the top board was missing for the east six feet of section #3, and no cover remained for the joint. A portion of the top board was present in section #2 but not for the whole length. The side boards also deteriorated towards the south, until in section #1 they were no longer measurable. Eventually only the bottom board remained. South of the remaining wood there was quite a clear soil stain running south for about 14' to a gap in the stone wall which crossed the line of the drain (Fig. 8). The poor presevation in this section of drain #4 may be attributed to the wet reddish-brown loam, 5YR 3/2, which was used as fill in the drain trench for all of drain #4. Where loamy soil came into contact with wood, as in the lower end of drain #1 and in drains #4 and #5, the preservation was very poor.

Drain #4, Section #1.

Section #1 is the southernmost section of drain #4 with the bottom board still remaining. It runs through lots 2E23D4, 11, and 18. The length of the top and side boards was not ascertainable in this section because they were too badly rotted. However the remains of the top board were .76' wide, .13' thick and had no nails traces in them. The west side board was .2' wide and .15' thick with traces of two nails driven up through the bottom board onto it. The bottom board, tapered to a long and pointed south end, was 11.2' long, .07' wide and .04' thick. There was one nail fragment left in this board.

Drain #4, Section #2.

Section #2 runs from the north part of 2E23D11, through 2E23D19, and into 2E23D14. It has the top board present in 2E23D14 for 1.8' but only fragments extend further south than that. The few nail remains left in this section were only traces of oxide and were not recorded. The bottom board was 13.6' long, .75' wide and .1' thick. The west side board was .25' long, .35' wide and .20' in thickness. Only 1.8' of the top board remained but this was .78' wide and .10' thick respectively. The only measurement on the east side wall was the thickness which was .20'. These side boards of drain #4 are remarkable for their thickness of .20' because for the rest of the drains in the system the width of the side boards was between .13' and .17'. The extra thickness may have been necessary to allow the top board to cover the width of the drain channel and rest securely. The top board did not reach right across the drain from outside edge to outside edge, but covered only half the thickness of the side walls.

The funnel pieces were the connecting links between the NS and the EW sections of the drain (Fig. 2). The west piece was the smaller, being on the inside of the angle and was 1.2' long, .20' wide, and .28' thick. The east piece was 1.9' long, .20' wide, and .26' thick. They were closed beside the edges of the drain at their north ends, and slanted out away from the drains at the south. Their function appears to have been to steer the water around the corner, but would have worked if the flow had been in either direction, which does not give much assistance in determining the direction of flow.

Drain #4, Section #3.

This is the east-west section of drain #4 running from the southeast corner of 2E17 to the joint with section #2. It lies in 2E23F4. The western six feet were covered and the top board could not be removed because it ran under the stone east wall of 2E17. The top board was about .75' wide. The drain itself was .9' wide from outside edge to outside edge. The side boards were .2' thick and about 10' long. They did not extend as far west as section #2. A gap was left on the north side presumably where drain #1 would have joined it had drain #1 not disintegrated (Fig. 2). On the south side a small piece of wood, about 1.8' long and .2' wide served to fill the gap. The width of the channel of section #3 at the west end was .45'. No nails were found in this section.

Drain #5.

General

Drain #5 was not fully excavated due to lack of time and the difficulties in manouvering around it: namely, the wet soil and the close proximity of the foundation wall of 2E16. However, it showed a number of interesting

characteristics where it was revealed in lots 2E16U5, 2E16U6, 2E16U7, 2E16U8, and 2E23H1. Drain #5 ran the whole length of the exterior west foundation wall of 2E16, and under the east-west brick walkway to the south of 2E16. Thus drain #5 was about 80' long and was measured as .7' wide in 2E16U7. Its purpose seems to have been to drain the outside of the foundation of this building (2E16), because drain #3 ran to the inside of the building to drain the interior. The area certainly required draining as it was soggy even during the exceptionally dry summer of 1968.

The point of intersection with drain #3 was excavated and it was discovered that drain #5 crossed over drain #3, about .8' above it. The two had been connected however. Unfortunately drain #5 had disintegrated almost completely in this region, but drain #3 had a rectangular hole measuring .4' by .7' in the top board. There were also the remains of a wooden pipe connecting the two drains. It was made of a number of vertical pieces of wood forming a rough circle, measuring .45' EW and .3' NS. There were two nails lying across the opening, perhaps acting as a grate, or they may have helped to hald it together.

Another interesting feature of drain #5 was that the flow of water went from both ends towards the centre and the intersection with drain #3. The lowest elevation of the drain was 122.46' A.S.L. at the centre point. The north end was 122.96' A.S.L. and the elevation taken in 2E16U5 (south of the centre point) was 122.62' A.S.L.

Preservation of this drain was not very good. The top board was deterriorated in all the lots dug. The side boards were in poor condition, especially in lot 2E16U5, where the drain had been excavated in 1967, and

eight nails removed (Korvemaker 1967). However the bottom boards throughout the length of the drain seemed to be in a fairly good state of preservation. This descrepancy in preservation can be partly attributed to the fact that in 2E23H1 the bottom board was found to rest on the wet reddish-brown clay, 7.5YR 4/3, which has been previously mentioned in connection with good preservation, while the drain trench was filled with 5YR 4/3, reddish-brown sandy loam.

In the side boards exposed in lot 2E16U7 were two oval holes running lengthwise, spaced 1' apart in each side board. These were .45' long and .17' wide, spaced alternately on both sides of the drain. They were not accidental because the wood had been slightly bevelled around the edges of the holes. Their uniqueness lies in the fact that they only showed up in this one lot of drain #5 and nowhere else. Their purpose may have been to let water enter the drain more easily but this does not seem probable.

Drain #6.

General.

Drain #6 runs from the centre of the west entrance to the British casemate (2E12) through lots 2E12A4, 2E12D4, and 2E12D5 to the north wall of 2E17 and is 20' long. The northeast end of drain #6 ran to the sill of the casemate door, which was three stones wide. Directly on the other side of the casemate doorsill, on the same vertical and horizontal level, was the west end of the brick drain 2E12Q which ran down the centre of 2E12 (Fig. 1).

The elevation of the inside of drain #6, about level with the bottom of the side boards, was 121.28' A.S.L. and the top of the side walls 121.45' A.S.L. Most of the overburden of earth had been removed from the lots over drain #6 before I began work there (Gusset 1969).

NW 122.96' A.S.L.

NE 123.14' A.S.L.

SE 122.81' A.S.L.

SW 122.11' A.S.L.

These are the corner elevations of subop 2E12D. Thus drain #6 had not been covered by any more than 3' of earth in contrast to the 6' over drains #1, #2, #3, and #4.

The cover of drain #6 was very fragmentary. Although we dug to a depth of 1' inside the drain we did not find traces of a bottom board, and the narrowness of the drain made it difficult to search further. The outside width of the drain was .5' and the inside width .35' which made it narrower than any of the other wooden drains.

There were seven round wooden posts wedged very firmly inside drain #6 at various intervals (Table 3). The posts were wedged between the side walls and extended down as far as we excavated (about 1 foot because the drain was too narrow to go any deeper). When we had excavated to this depth we still could not move them. The tops of these posts were slanted towards the southwest in the direction of flow of the drain. The stones along the sides of drain #6 may have been placed there to hold it in position. The only uses I could think of for them were to hold the side walls. There were a number of large stones resting directly over the line

of the drain in 2E12D4 and D5, and stones packed along the sides of drain #6 (Fig. 9). The stones along the sides of drain #6 may have been placed there to hold drain #6 in position.

Drain #7.

General

Drain #7 was the stone drain probably running from the French Powder Magazine in 2E11, south to drain #6 where drain #7 was cut off. The French stone drain consisted of two roughly parallel rows of stones extending at a 70 degree angle N.N.E. from drain #6 and swingling in a slight curve to N.N.W. It was dug to a depth of 1.5', but the depth of the two courses which made up the stone walls of the drain was only 1.0'. The interior width was 1.5'. Drain #7 was only excavated for 17.7' because of the lack of time and because the bastion had already been backfilled after the excavation of the French Powder Magazine.

However the north end of the drain had been uncovered in 1966, 4.5' south of the southern edge of the Powder Magazine (MacDonald 1966). The west wall was uncovered for 3.5' N.S. and the east wall for 4.5' N.S. At the northern end the drain is 1.5' wide (interior measurement).

Another stone drain, very like drain #7 was found in 2E22B (Moussette 1968).

2E23G.

An eight foot square trench was dug to a depth of about .8' on the south-east side of the parade square. It was dug in an effort to locate more of the drainage system on that side of the fort, but could not be extended to any greater depth because the corner of a brick pavement was found,

possibly a part of the British barracks which is in that area according to the historical plans. The depth of .8' was not great enough to reveal anything about the drains, although if there is a barrack there, a drain may run along it, as drain #5 runs along 2E16.

2E23J.

The only major stone feature found during the 1968 excavation of operation 2E23 was a small stone-walled feature (Fig. 12). There was also a 4' gap in the east end of the north wall probably broken down to let drain #4 run through. This was excavated to a depth of almost 8' below surface level (Fig. 10). The lots used to dig it were 2E23J1, 2E23J2, 2E23J3, 2E23J4, and 2E23D17 extension.

The north wall was the most complete wall of the room still standing, and it ran east-west for 12'. There were three courses of the 4' long west wall still standing complete. The south wall was as high as the north wall at its west end, but abruptly dropped to two courses in height towards the east. The south wall did not extend to the east wall, but there was a gap of 2.5' in the south wall which appeared to be the entrance way (Fig. 12). There was also a 4' gap in the east end of the north wall, which occured because the north wall had been broken down at this point, probably to let drain #4 through it. This seems likely because the courses of stone in the wall below the level of drain #4 were not disturbed.

The east wall of this room was fragmentary at the top, but formed of solid masonary below. It was curved as though the northeast corner had

not been square, but a curve, which had extended into the east wall. This was the more peculiar because the other walls of the feature were straight. In its north-south section the east wall was 6' long (Fig.12).

It was difficult to ascertain the length of the feature because of the curve of the east wall. The length of the north wall at its longest point from the west wall to the gap, was 12', and the length of the room would have been about 16'. It was 4' wide. A seven foot depth was reached along the north wall. The topsoil over the top stones in the wall was .8' thick.

The elevation of the top of the wall at the west end was 122.39' A.S.L. and at the east end was 122.47' A.S.L. The elevation of the ground at the base of the wall at the west end was 116.88' A.S.L. and at the east end was 117.91' A.S.L. Digging was stopped at this level because a few traces of wood were found (Fig. 10). It was felt that this might have been the floor level, because in this lot (2E23J3) was the wet reddish-brown loam, 5YR 3/4, which had previously been found to be associated with poor preservation of wood in the drains. Also the ground was becoming very soggy and it was difficult to dig carefully.

The stones in the north wall of this feature were quite large, about 1.4' by 1.0'. The mortar holding them was very crumbly and sandy, and the joints could be deeply raked. The walls were absolutely plain except that the north wall was broken down in the east end as previously mentioned.

concentrations of different kinds, such as bone and ceramic in 2E23A1, which was a very long trench. In the surface lots 2E23D1, D9, and D5, over drain #4, ceramics, bones, and a few buttons were found. In the topsoil lots over drain #3 however, nothing was found except in 2E23C8 where a number of iron artifacts, including a horseshoe and a musket trigger guard were found.

The second layer of artifact occurance was the layer between the surface lots and the drains. Artifacts were not numerous here, although some bone, glass, and bricks were found along the line of drain #1, in the 2E19D lots and 2E23A3,4 and A6, and A7. There were many more artifacts in the lots between drain #4 and the surface, but I think that is because the drain trench was filled with topsoil taken from elsewhere in the fort. The lots over drain #3 had no artifacts or brick fragments in any of them.

The third area of occurance was inside the drains themselves. A few bits of glass and ceramics occured inside all of the drains, probably having been washed there. These were the only artifacts except for a cannon ball and a very few bits of ceramic and glass that were found associated with drains #6 and #7. Also found in the drains were the iron nails holding them together. Where possible these were extracted and labelled with the number of the drain and section from which they came. Those found in drain #3 were in very good condition as the wood had not rotted away from around them. They were about .4' long, hand made, square, with a flattened rectangular head, very sharply pointed, and were probably wrought iron.

The fourth area, and the one of greatest artifact concentration, was in the south end of drain #4, in lots 2E23D5, D6, D7, D8, D15, D16, and D17, and 2E23J1, J2, J3, and J4, where glass, bones, ceramics, iron fragments, buttons, gun flints, and many other artifacts turned up in great profusion; here the soil was the 5YR 3/2, reddish-brown, loamy clay.

One large earthenware dish, of which most of the fragments were present, was found and given artifact number 2E19D8-1. It was probably a butter skimmer, being round with wide flaring sides.

An object made of wood was found directly beneath the bottom board of section #5 of drain #1. It was a section of a dressed plank of wood 2.6' long, .7' wide at the widest, and roughly shaped like an owl. There was a notch in the narrow end, leaving two pointed, earlike projections, and three round holes, spaced as for two eyes and a mouth. There were also crisscross lines carved shallowly into one side. It was in a good state of preservation and was given artifact number 2E19D11-1.

Stratigraphy.

The stratigraphy of the drain trenches was very simple toward the north-east end of the trenchs for drain #3 and became more complex toward the west and south.

Only two distinct layers were present over the east end of drain #3. The first which is lablled layer #1 was a brown topsoil layer, 7.5YR 5/2, about .5' thick. The next layer which is called layer #3 extended the rest of the way to the drain and was composed of sandy clay and many small stones. It was 5YR 4/4, reddish-brown, and between 5' and 6' thick.

This two-layer sequence extends to the west for about 75', (Fig. 13: A to B) where a new layer makes its appearance below the sandy clay layer. This new layer was also composed of sandy clay, reddish brown in colour, 7.5YR 4/3, which is slightly darker than layer #3. A lens of very small pebbles, mortar and broken brick appeared between layers #1 and #3. It was probably associated with the brick work around 2E19. The lens was from .3' to .6' thick and about 13' long (Fig. 13: B to C). This lens did not extend to the junction of drains #1 and #3.

The section of the trench for drain #1 where drain #3 cuts into it (Fig. 13: D to F), had the same three layer stratigraphy. However south of this in the area of 2E23A (Fig. 13: E to F), layer #2 arises between the topsoil layer and the sandy clay layer #3. Layer #2 at its north end is filled with brick and stone rubble, and is 5YR 3/3 dark reddish-brown. These 4 layers continue quite evenly south for about 36' (Fig. 13: E to F). A few feet further (Fig. 13: G) the "drain trench" juts west about 6' and a new layer suddenly appears (Fig. 13: G to H). It is labelled layer #5 although it occurs between layer #3 and #4. Layer #5 is present for about 10' and then disappears from the wall of the trench because the wall angle eastward. The drain trench fill that formed layer #5 was removed as we excavated the drain.

However the stratigraphy of the east wall of the trench for drain #4 continued as 4 layers for about 16' south (Fig. 13: H to J). From J to the south end of the trench the stratigraphy becomes quite complex although the five basic layers just described form the basis of it.

It appears that this area was covered over with fill of brown clay with many small stones in it, 7.5YR 5/4. Over this was placed, or developed if it was left long enough, a thin topsoil layer of fine soil with root hairs in it of 7.5YR 4/2 dark brown loam. This top layer did not extend more than 8' south of the north end of 2E23D5,6,7,8 (Fig. 13: J to K). Below these two layers was the old surface layer, which was a fine, grainy, dark reddish-brown loam, 5YR 2/2, and was .7' thick. Then came layers #2, #3, #5, and #4 as they have been described before.

The crossectional view of the trench for drain #4 (Fig. 11) at the south end of lots 2E23D5, 6, 7, 8 had the same layers as the long section. These were surface cover, old turf layer, sandy clay, drain trench and sandy clay, in the same order, except that the topsoil layer was missing. However the drain trench layer #5 which had a great many artifacts associated with it, grew very deep to the west of the crossectional face until it reached the drain level (Fig. 11). The preservation of wood was poorer in drain #4 than in other drains perhaps because of the influence of the soil in layer #5.

Drain #5 showed differential preservation because the top and side boards were covered with reddish-brown loamy clay, 5YR 4/3; thus they were very poorly preserved, while the bottom board was resting on heavy red clay, and was fairly well preserved.

Layers #1 and #2, the top soil layer and the loam layer just below it, can be grouped together because the type of soil was similar, and because they were often dug together. In drain #3 trench they were treated as one layer because layer #2 was not distinguishable.

Layers #3 and #4 can for the most part be grouped together on the basis of similarity of soil type and artifact content. Although the whole parade square is made up of artificial layers, layer #5 is not grouped with any other layer because it is evidence of purposeful trenching for the drain. It extends to fill the room of the stone structure 2E23J.

Sod and topsoil layers. Layer #1.

These are the surface lots along the approximately 200' of drain trench, averaging 5' wide which were dug to expose the drains.

2E23A1, A5
2E23D1, D9, D5
2E23C1, C5, C8, C11, C14, C17, C20, C23, C25
2E23F1
2E23G1
2E23J1, 2E23J1, J4
2E23E1
2E16S3

Layer #2.

This is the loam layer found only in the north-south trenches between layers #1 and #3. It was dug separately only in these lots.

2E23A2
2E23G2, G3, G4
2E23D2, D6
2E23F2
2E23E2

Layers #3 and #4.

These were reddish-brown, sandy clay layers with no difference in soil type or apparent artifact content. Layer #3 was 7.5YR 4/3, and layer #4 was slightly darker being 7.5YR 4/4. These two layers were so alike

that they probably would not have been dug separately, but it was decided that if they were combined the lots would be too deep for good vertical control. Therefore the two lots were separated vertically, even in the east end of the drain #3 trench where layer #4 was not present.

2E23A3, A4, A6, A7
2E23D3, D4
2E23E3, E4
2E23C2, C3, C6, C7, C9, C10, C12, C13, C15, C16, C18, C21, C22, C24, C26
2E19D6, D7, D8, D9, D10, D11, D12, D13, D14 D15
2E16S4, S5
2E12D4, D5

Layer #5.

This was the drain trench fill, 7.5YR 3/2, reddish-brown loam found in the trench for drain #4. It had a high artifact concentration.

2E23D7, D8, D10, D11, D12, D13, D14, D15, D16, D17
2E23F3, F4
2E23J2, J3

Arbitrary lots in sandy soil from surface to drain, regardless of layers.

2E23H1, H2, H3
2E12A8, A9, A10
2E23C27
2E12D5
2E23C4

Arbitrary lots in loamy soil which extended from the surface to the drain. Artifact content will be different than those arbitrary lots in sandy soil.

2E16U6, U7, U8
2E23D18, D19

(Table 4)

An interesting stratigraphic feature was the brown sand 7.5YR 5/4, and 7.5YR 4/3 reddish-brown sand which was found inside all of the wooden drains. It was not like the yellowish-red sand 5YR 4/8, like that found on the floorboards of 2E18 but was fairly coarse, like beach sand. It must have been washed into the drains. There was usually also a layer of fine clay which seemed to have been washed in over it. In some places these layers filled the inside of the drains.

Historical reference.

The system of wood drains was not mentioned on any of the maps or original notes of Fort Beausejour, although the stone drain running south from the southeast corner of 2E17 was marked. There were also stone drains running from four of the bastions; and in the fifth, the Duke of Cumberland Bastion, there appeared to be a wooden subfloor drain under the entrance to the casemate. In 2E11, drain #7 led from the French Powder Magazine southwards towards the parade square, but its original outlet was not apparent as it had later been cut off by drain #6. This drain was constructed of two parallel rows of flat stone walls, each two courses high and 1.5' apart. The drain in Prince William Bastion, in 2E22B, was of very similar construction, and led from the casemate northwest towards the parade square. The drain leading from the well in Prince Fredrick Bastion was a deeper drain of different construction. It had a stone floor and was narrower than those in 2E11 and 2E22. The outlet for this drain seemed to be at surface level or just under it. It was about 3' west of the south end of the wooden drain #5 but the wooden drain was about 3' deeper. The drain coming from the casemate in Prince Henry Bastion, 2E13K9, was much shorter and of simpler

construction than the other stone drains. The end nearest the casemate was formed of two rows of stones, one course high which came together in a Y shape, joining towards the southwest. There were several more stones in a single row to the southwest forming the tail of the Y. This structure extended towards the parade square (Herst 1969).

The wooden subfloor drain found in 2E18 is an unusual feature because it is the only wooden drain directly connected with a French-built structure. Wooden drains #1 through #6 are all associated with British buildings. However the subfloor drain in 2E18 may connect in some way with the narrower deep stone drain running from the southwest corner of 2E17, across the entrance of the Duke of Cumberland Bastion, and to the south. Another alternative is that there may be a stone drain under the floor of 2E18 casemate, but at a greater depth than was reached in the excavations in 1968.

Because of their close association with French-built structures it seems reasonable to assume that these five stone drains in 2E11, 2E13, 2E17, 2E20, and 2E22 were French. However by the same reasoning, and especially because of the close association of drain #1 with 2E12 the British casemate, the wooden drains appear to be British.

There are probably more wooden drains on the south and east sides of the parade square, and they may even form a system of their own, because the land slopes down on the south side of the fort and it would be difficult to connect drainage from there with a system on the north and west sides of the fort.

Trench 2E23G was put in to try and locate indications of a drain on the south-east side of the parade square. However it ran into so many structures on the surface that we could not get deep enough to look for a drain.

The brick drains also appear to be associated with British structures. The drain in 2E12Q, which had a flooring two bricks laid end to end wide, and sides two bricks high, ran the length of the casemate. It seemed to be connected with drain #6, the north west end of which was just west of the doorsill. The west end of the brick drain ended at the doorsill. There was no indication that there was any connection between the brick drain 2E12Q and drain #1, although the north end of drain #1 was also in casemate 2E12 (Dendy 1968).

Another drain, very similar to 2E12Q was found in the British casemate along the south stone curtain wall (Sauerbrunn 1965). There is some basis for believing that the south end of drain #4 may have been connected with the brick drain. Although the brick drain was gone in 1968, and the south end of drain #4 had rotted away, an extrapolation of their location and direction intersect about the point where the cement drain was installed in 1962. There was apparently a low brick archway through the south stone curtain wall just south of the modern cement drain (Sauerbrunn 1965). Sauerbrunn mentioned that it might be a drain outlet and this seems quite probable. In that case the brick drain, and probably drain #4 would either date prior to, or more likely, contemporary with the stone curtain wall, which was started in 1756.

There were two surface runoff drains of brick, extending from the brick walkways around buildings 2E16 and 2E17. The brick drain from 2E16 ran at an angle straight from the southwest corner of the buildings brick walk, out in front of Prince Fredrick Bastion (2E20). The brick drain from 2E17 ran at nearly right angles to the north-south walkway along 2E17, out into the parade square, for about 6'. Drain #1 ran parallel to this brick walkway, about 6' east of it, and so ran right under the end of the little brick surface drain, at a depth of about 6'. Because of this coincidence of brick and wood drains, a trench was dug at the end of the brick drain running from 2E16. However nothing was found in this trench 2E16S3,4,5, although we dug to a depth of 118.57' A.S.L.

Dating.

Some of the drains can be dated relative to each other by details of their construction. The clearest example of this is the intersection of drain #3 and drain #5, where drain #3 runs east-west, about .8' under drain #5, which crosses over it running north-south. This makes it clear that drain #3 was laid down to drain the interior of 2E16 before drain #5 was laid down to drain the outside of the foundation wall of 2E16. The funnel which joined drains #3 and #5 may be an indication that the two drains were constructed within a short time span. This is not absolute proof however because the water from drain #5 would need an outlet, and drain #3 could be easily located because of the presence of the grate on the interior wall of 2E16.

Sections #5 and #6 and the north part of drain #1 seem to be contemporaneous with drain #3. This conclusion is reached because of their similarity of construction. The side boards in both drains flank the

bottom board, their lower edges level with the under side of the bottom board. There were crosspieces present in both drains #1 and #3 and nowhere else. The well-made joint between drain #1 and drain #3 also argues that they were laid at the same time.

The difference in construction between the north end of drain #1, from the North Stone Wall to the south end of section #5, and the rest of its length, comprising sections #1 through #4, seems to argue that these two major parts were built at different times. The southern end of drain #1, in contrast to the northern part, which has just been described, had the side boards resting on top of the bottom board. As a consequence, the bottom board of the south part was much wider .85', than the bottom board found in the north section, which .45' wide. Another differentiating factor was that the nails holding the side boards to the bottom boards were horizontal in the northern section; they were vertical, driven up through the bottom board, in the southern section.

However drain #2 was constructed in very much the same manner as the southern portion (sections #1 to #4) of drain #1; moreover, drain #2 was cut off by section #5 of drain #1. This was done at such an angle that it would not have been difficult for water to flow from drain #2 into the southern portion of drain #1, before drain #2 was cut off.

The explanation for these phenomena must take into consideration several factors. The first is that the North stone wall and casemate were built in 1756, and presumably drain #1 was constructed at the same time. There was then no structure flanking the North stone wall and thus the drain

trench could easily be dug. Second, in 1776 the structure refered to as 2El9 was built, and presumably drain #2 was constructed at the same time, and flowed into drain #1. The third factor is that the section of drain #1 north of the juncture with drain #2, and drain #3 were constructed at the same time.

One explanation is that drains #1 and #2 were built contemporaneously with the structures they were designed to drain. Later the north part of drain #1 may have been rebuilt in a different manner when drain #3 was constructed to drain the interior of 2El6. Drain #2 may have been cut off at that time, either because it was felt that the rejuvenated drain #1 could drain the building adequately, or because the building was not longer used. This work may have been done in 1779 or 1784 because in both those years repairs were made on the structures of the fort. Still later drain #5 was built to drain the exterior of the west wall of 2El6. According to the historical report officers quarters were constructed on the east side of the parade square sometime after 1779, and during the 1820's alterations were made in some of the buildings, but reports are confused. In 1823 the officers quarters were reported to be equipped with a cellar (Nadon 1966) which would require drainage because of the local climate and topography.

Drain #4 is difficult to date relative to any other wood drain because it is not in direct association with any except perhaps the east-west brick drain in the south British casemate. It is however, in close proximity to the stone drain running south from the south end of 2El7.

The little brick splash and runoff drain extending east from the brick walkway along 2E17, could have been laid only after drain #1 section #1 was laid down, because the fill of the drain trench is clearly visible running under the brick drain in the north wall of 2E23F.

Drain #6 seems to be later than drain #7, as drain #7 drains a French Power Magazine, and drain #6 drains the west entrance to the British-built Casement 2E12. Also drain #7 is cut off by drain #6.

Conclusions

A number of conclusions can be drawn from this material.

1. The evidence suggests that the wooden drainage systems were built by the British after they captured Fort Beausejour in 1755. They were laid down to drain British built structures such as 2E12, 2E16, 2E17, and 2E19. The stone drains in 2E11, 2E12, 2E13, 2E17, 2E20, and 2E22, seem to be closely related to French structures, although in the Technical Study of Fort Beausejour (Nadon 1968) it is mentioned that the French used little stone. There is a wooden subfloor drain in 2E18, a French Casemate; this drain was excavated as shown on historical plans (Nadon 1966).

2. There appear to be two distinct methods of constructing a square wooden drain, although in both cases the bottom and side boards were put together to form the trough before these top boards were laid in position. This is evident from the manner of nailing. The top boards were then added. One method of construction (Fig. 4a) had the side boards resting on the bottom boards with nails driven vertically through the bottom

board from underneath, into the side boards. This construction was used on drains #2, #4, and #5, and sections #1 through #4 of drain #1. The other method of construction, which was to place the bottom board between the side boards and nail horizontaly through the side boards into the bottom boards, was used in drain #3 and section #6 and #5 of drain #1. The construction method for drain #6 was not clear, as the bottom board was missing.

It was upon the basis of these differences in construction and the peculiarities of the joints between the drains, as well as the records in the historical report, that the relative dating of the drains was based. Drain #1 was probably laid in 1756 when the British Casement (2E12) was constructed. Drain #6 may also have been built at the same time. Drain #4 was possibly built at the same time. It seems to have been associated with the casemate and brick drain (2E21) built along the south stone curtain wall in about 1756. The brick archway in the south stone curtain wall (Sauerbrunn 1965) would most probably be an outlet for the water collected by those two drains, thus making the drains contemporary with the stone wall. Another reason for dating drain #4 early is that the water from drain #1 would need an outlet. Drain #2 probably dates to 1776, when 2E19 was built. There seems to have been some repair work on the northern end of drain #1 from the North stone wall to the juncture with drain #3, when drain #3 was constructed. Drain #5 is probably later than drain #3 because it crosses drain #3 although the preservation of drain #5 is much poorer. Drain #7 was built before the fort was captured by the British in 1755.

These conclusions seem valid, and probably with more study, both of the facts available and of new facts, many more conclusions will be drawn in the future.

TABLE I

List of Lots and Size of Trenches (Fig. 1)

No. of Trench	List of Lots	Size of Trench N.S.	E.W.
1.	2E19D10, 11, 15	9.6'	7.3'
2.	2E19D6, 7, 8, 9	5.0'	8.0'
3.	2E19D12, 13, 14	3.0'	5.0'
4.	2E23A1, 2, 3, 4	26.0'	5.0'
5.	2E23A5, 6, 7	3.0'	5.0'
6.	2E17K7	9.3'	9.6'
7.	2E23D12, 13, 14	13.4'	5.0'
8.	2E23D19	2.0'	5.0'
9.	2E23D9, 10, 11	14.0'	5.0'
10.	2E23D1, 2, 3, 4	4.0'	7.0'
11.	2E23D18	2.0'	5.0'
12.	2E23D5, 6, 7, 8	13.7'	5.0'
13.	2E23D15, 16, 17	5.0'	10.0'
14.	2E23J1, 2, 3	5.0'	7.5'
15.	2E23J4	2.2'	7.4'
16.	2E23F1, 2, 3, 4	5.0'	9.0'
17.	2E23C1, 2, 3, 4	8.0'	11.2'
18.	2E23C5, 6, 7	5.0'	15.0'
19.	2E23C23, 24	5.0'	2.0'
20.	2E23C11, 12, 13	5.0'	15.0'
21.	2E23C17, 18, 19	5.0'	12.4'
22.	2E23C20, 21, 22	6.0'	17.4'
23.	2E23C27	5.0'	2.0'

TABLE I Cont.

No. of Trench	List of Lots	Size of Trench N.S.	E.W.
24.	2E23C14, 15, 16	6.0'	10.0'
25.	2E23C8, 9, 10	8.0'	5.0'
26.	2E23C25, 26	5.0'	7.0'
27.	2F23E1, 2, 3, 4	5.0'	8.0'
28.	2E23H2	5.0'	3.0'
29.	2E16U8	6.0'	3.0'
30.	2E16U7	6.0'	3.0'
31.	2E16U6	5.0'	3.0'
32.	2E16U5	-	-
33.	2E23H1	4.7'	3.0'
34.	2E23H3	3.0'	3.0'
35.	2E16S3, 4, 5	7.0'	5.0'
36.	2E23G1, 2, 3, 4	8.0'	8.0'
37.	2E12D4	6.0'	8.2'
38.	2E12D5	6.0'	3.7'
39.	2E12D8	3.9'	4.3'
40.	2E12A9	5.2'	5.0'
41.	2E12A10	4.5'	4.5'

TABLE 2

Size of Drainboards (of drains removed)

Drain	Board	Length	Width	Thickness	Nails
Drain #1 section 1	1. bottom board; 2. rest of boards not present	4.2'-3.8'	9.5'	.12'	-
section 2	1. top board not present;	-	-	-	-
	2. west side board too broken;	-	.38'	.11'	1
	3. east side board too broken;	-	.35'	.12'	0
	4. bottom board	9.5'	.70'	.12'	6
section 3	1. bottom board; 2. rest of boards too broken	2.05'	.80'	.13'	4
section 4	1. top board not present	-	-	-	-
	2. west side board;	19.8'	.48'	.16'	5
	3. east side board;	19.3'	.46'	.14'	6
	4. bottom board;	20.0'	.83'	.15'	16
section 5	1. top board	13.6'	.92'	.09'	2
	2. west side board	12.6'	.55'	.14'	4
	3. east side board	12.4'	.54'	.15'	4
	4. bottom board	12.7'	.45'	.17'	8
section 6	1. top board	13.6'	1.09'	.12'	2
	2. west side board	12.45'	.7'	.18'	5
	3. east side board	12.50'	.7'	.15'	7
	4. bottom board	12.65'	.55'	.19'	12
crosspieces of drain #1					
	1.	-	.16'	.06'	1
	2.	.78'	.14'	.01'	2
	3.	.82'	.14'	.05'	2
	4.	.82'	.25'	.07'	1
	5.		not present		
	6.	.83'	.21'	.07'	1
Drain #2	1. top board not present	-	-	-	-
	2. west side board;	20.0'	.45'	.13'	3
	3. east side board;	15.0'	.43'	.13'	3
	4. bottom board;	20.3'	.86'	.17'	3
Drain #4 section 1	1. top board	-	.76'	.13'	0
	2. west side board	-	.2'	.15'	0
	3. east side board	-	.2'	.20'	2
	4. bottom board	11.2	.70'	.04'	1

TABLE 2 (cont.)

Drain	Board	Length	Width	Thickness	Nails
Drain #4					
section 2	1. top board (split log)	-	.78'	.10'	-
	2. west side board	9.25'	.35'	.20'	-
	3. east side board	-	-	.20'	-
	4. bottom board	13.6'	.75'	.11'	-
Funnel pieces	West piece	1.2'	.20'	.28'	-
	East piece	1.4'	.20'	.26'	-
Drain #3					
Topboards	1. (starting west)	14.4'	1.0'	.15'	4
	2.	13.6'	1.05'	.13'	4
	3.	15.08'	1.20'	.15'	4
	4.	13.25'	1.06'	.14'	4
	5.	9.3'	1.08'	.14'	4
	6.	13.4'	1.05'	.15'	4
	7.	15.0'	.9'	.15'	4

#3 crosspiece spacings taken from Fig. #3		
	first to second crosspiece	9.4'
	second to third crosspiece	6.4'
	third to fourth crosspiece	5.0'
	fourth to fifth crosspiece	6.2'
	fifth to sixth crosspiece	7.6'
	sixth to seventh crosspiece	7.9'
	seventh to eighth crosspiece	7.5'
	eighth to ninth crosspiece	6.0'
	ninth to tenth crosspiece	8.2'
	tenth to eleventh crosspiece	6.4'
	eleventh to twelfth crosspiece	5.6'
	twelfth to thirteenth crosspiece	6.4'
	thirteenth to fourteenth crosspiece	7.1'

#1 crosspiece spacings taken from Fig. #4 sections #5 & #6		
	south end of section #5 to first crosspiece	1.3'
	first to second crosspiece	5.8'
	second to third crosspiece	4.5'
	third to fourth crosspiece	4.4'
	fourth to fifth crosspiece	9.5'

TABLE 2 (cont.)

Drain	Board	Length
Drain #3		
section #1	bottom board	13.8'
	side boards	13.8'
section #2	bottom board	12.4'
	side boards	12.4'
section #3	bottom board	14.6'
	side boards	14.6'
section #4	bottom board	14.6'
	side boards	14.6'
section #5	bottom board	12.8'
	side boards	12.8'
section #6	bottom board	12.3'
	side boards	12.3'
section #7	bottom board	14' approx.
	side boards	14' approx.

TABLE 3

Spacing of the uprights, Drain #6 numbering from North to South

North end to 1	2.0'
1 to 2	3.7'
2 to 3	.8'
3 to 4	1.1'
4 to 5	5.8'
5 to 6	1.0'
6 to 7	2.8'
7 to South end	2.0'

TABLE 4

Lot Groupings by Layers

LAYERS	LOTS
Layer 1: sod and topsoil 7.5YR 5/2, brown	2E23A1, A5 2E23D1, D9, D5 2E23C1, C5, C8, C11, C14, C17, C20, C23, C25 2E23F1 2E23G1 2E23J1, J4 2E23E1 2E16S3
Layer 2: loam 5YR 3/3, dark reddish brown	2E23A2 2E23D2, D6 2E23E2 2E23F2 2E23G2, G3, G4
Layer 3: sandy clay 7.5YR 4/3, reddish brown	2E23A3, A6 2E23C2, C6, C9, C10, C12, C13, C15, C16, C18, C21, C22, C24, C26 2E23D3 2E23E3, E4 2E19D6, D7, D9, D10, D12, D13, D15 2E16S4 2E12D4, D5
Layer 4: sandy clay 7.5YR 4/4, reddish brown	2E23A4, A7 2E23C3, C7 2E23D4, D8, D11, D14 2E16S5
Layer 5: loamy clay 7.5YR 3/2, dark brown	2E23D7, D8, D10, D11, D12, D13, D14, D15, D16, D17 2E23F3, F4 2E23J2, J3
Arbitrary: surface to drain sandy soil	2E23C4, C27 2E23H1, H2, H3 2E12A8, A9, A10 2E12D5
Arbitrary: surface to drain loamy soil	2E16U6, U7, U8 2E23D18, D19

TABLE 5

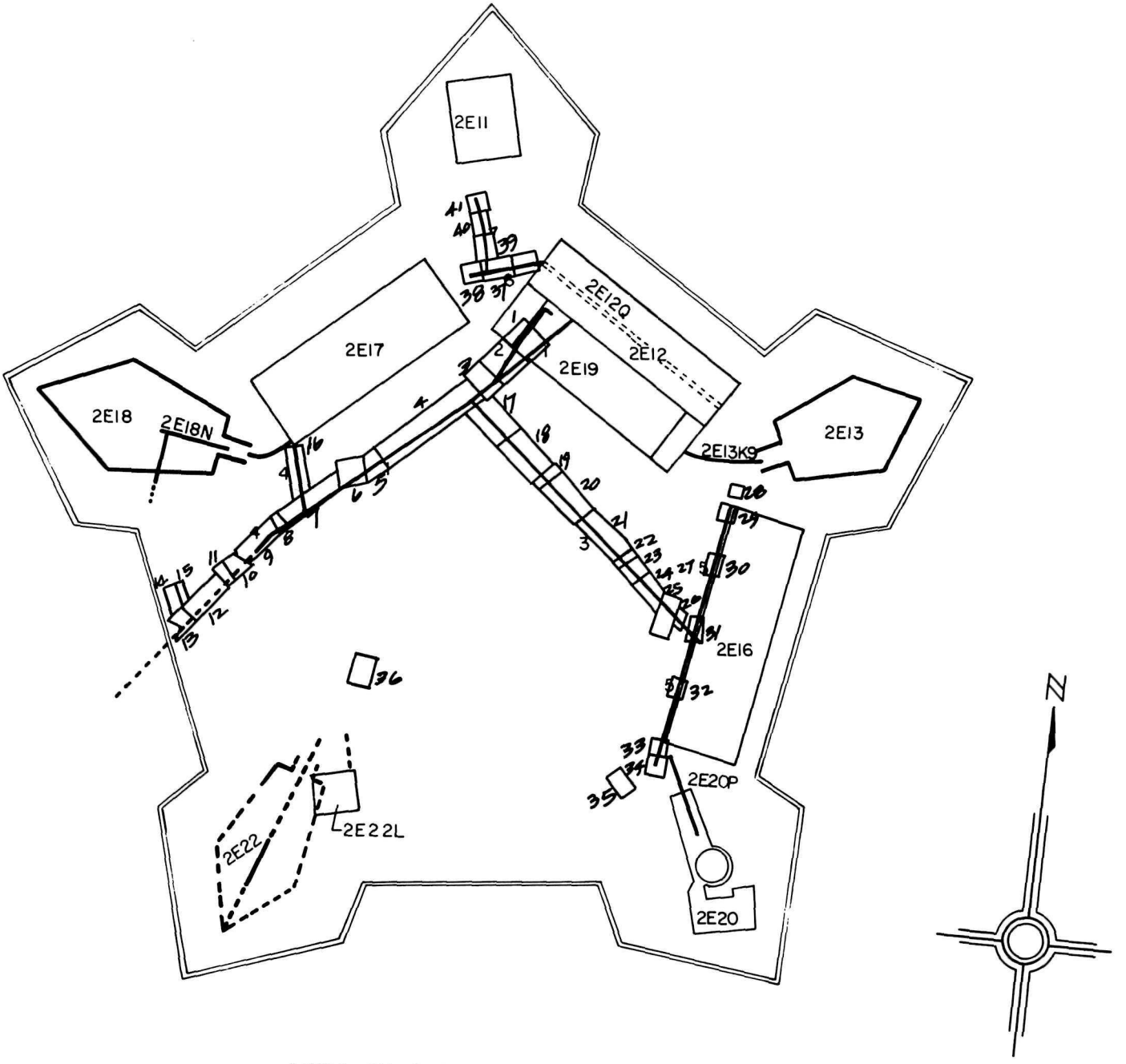
Slope elevation of drains. Taken at approx. 5' intervels.

Drain #1	Drain #2	Drain #3	Drain #4	Drain #5
North to South 58'	North to South 20'	East to West 98'	North to South 28'	North to South 80'
120.00' ASL	119.39' ASL	119.77' ASL	117.53' ASL	122.96' ASL
119.85' ASL	119.35' ASL	119.66' ASL	117.50' ASL	122.72' ASL
119.76' ASL	119.33' ASL	119.62' ASL	117.61' ASL	122.87' ASL
119.70' ASL	119.32' ASL	119.61' ASL	117.62' ASL	122.46' ASL centre
119.67' ASL	119.27' ASL	119.60' ASL	117.62' ASL	122.62' ASL
119.62' ASL		119.57' ASL	117.59' ASL	
119.58' ASL		119.55' ASL	117.61' ASL	
119.53' ASL		119.53' ASL	117.60' ASL	
119.44' ASL		119.49' ASL		
119.41' ASL		119.41' ASL		
119.40' ASL		119.34' ASL		
119.33' ASL		119.27' ASL		
119.29' ASL		119.25' ASL		
119.22' ASL		119.19' ASL		
119.23' ASL		119.17' ASL		
119.28' ASL		119.22' ASL		
119.30' ASL		119.18' ASL		
119.27' ASL		119.19' ASL		
119.25' ASL		119.17' ASL		
119.19' ASL		119.19' ASL		
119.13' ASL		119.10' ASL		
118.99' ASL		119.13' ASL		
		119.11' ASL		
		119.15' ASL		
		119.09' ASL		
		119.07' ASL		
		119.14' ASL		

Table 5 (cont.)

Drain	Total slope	Average slope for 5' horizontal distance
Drain #1	1.01'	.06'
Drain #2	.12'	.02'
Drain #3	.61'	.03'
Drain #4	.07'	minimal
Drain #5	Slope toward centre of drain from both ends	
Drain #6	No reliable indication of bottom was found	
Drain #7	for these drains, so no slope elevations were taken.	

Figure 1



KEY PLAN OF EXCAVATED DRAINS

FORT BEAUSEJOUR N.B. SITE 2E

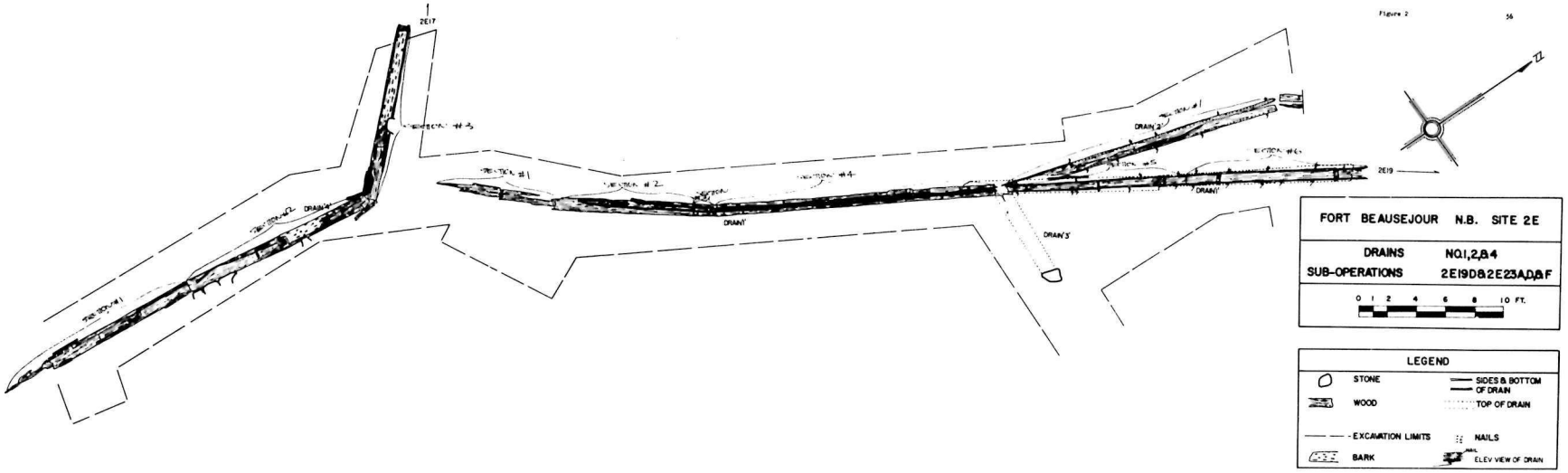
LEGEND:

12.....7 drain designations

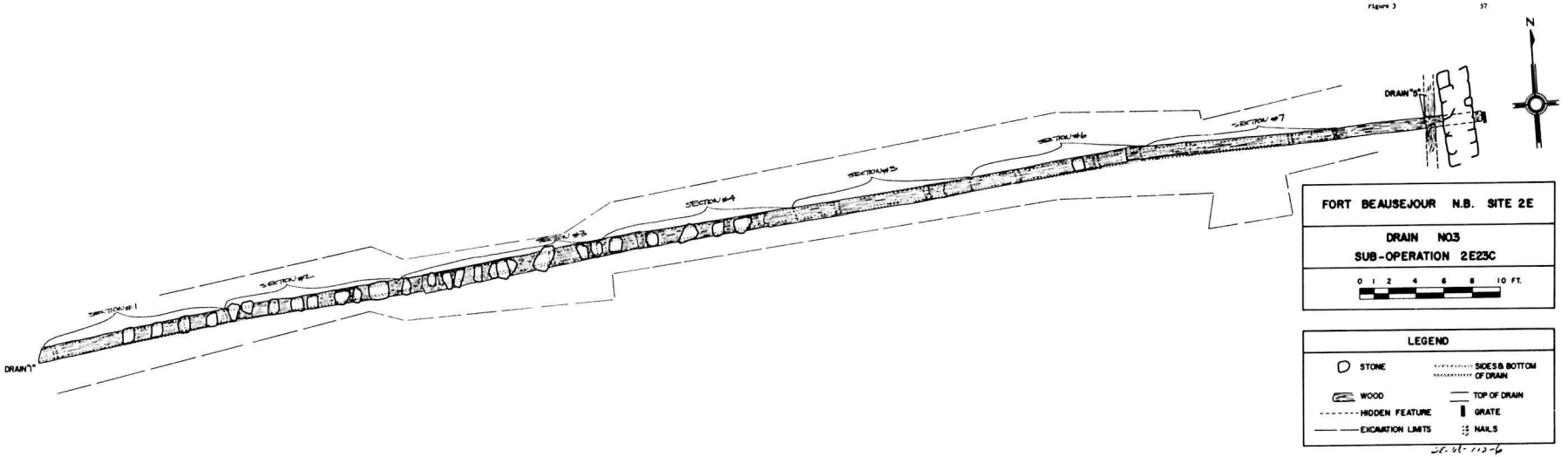
2E18, 2E13..... excavated operations

Not To Scale

(From 2E-68-102-8)

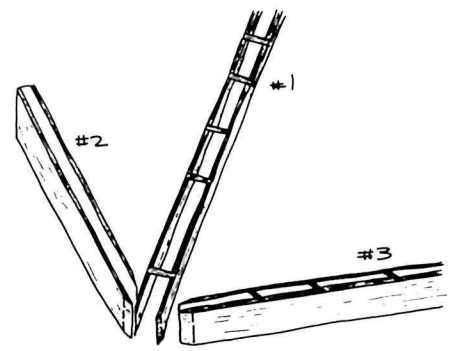


2. Section Designations and Plan of Drains #1, #2, and #4

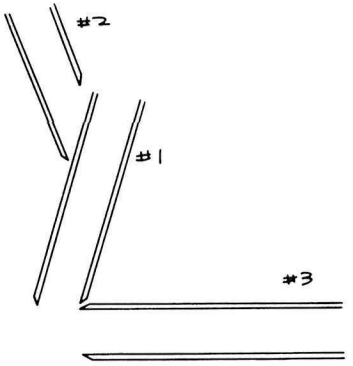


3. Section Designations and Plan of Drain #3

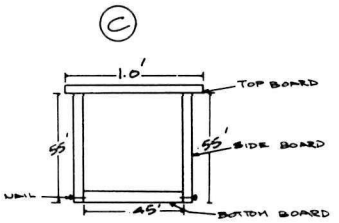
FIG. 4



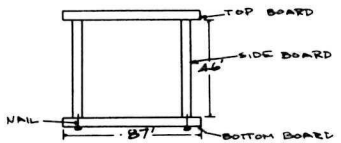
(A) THREE DIMENSIONAL VIEW
DRAINS #1, #2 & #3



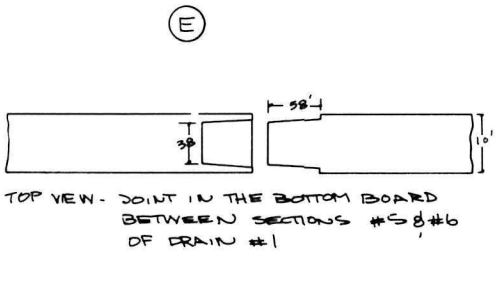
(B) TOP VIEW OF JUNCTURES
OF DRAIN #1, #2 & #3



DRAIN #1
SECTIONS #5 & #6

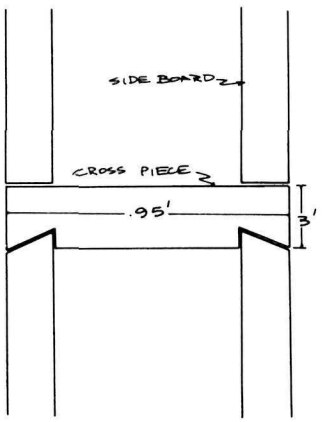


DRAIN #2
CROSS-SECTION

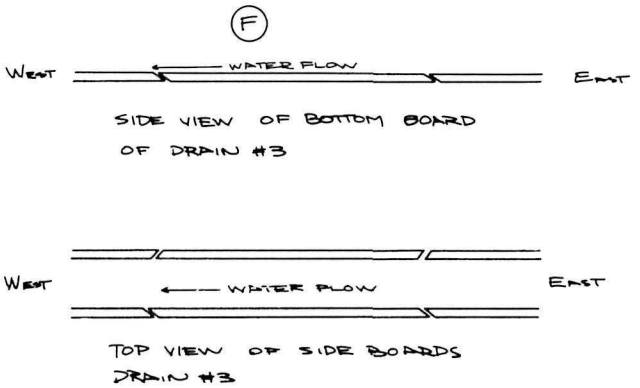


TOP VIEW - JOINT IN THE BOTTOM BOARD
BETWEEN SECTIONS #5 & #6
OF DRAIN #1

SIDE VIEW



(D) CROSS PIECES IN DRAIN #3



SIDE VIEW OF BOTTOM BOARD
OF DRAIN #3

TOP VIEW OF SIDE BOARDS
DRAIN #3

- NOT TO SCALE -

4. Drawing of crossections of Drains #1 and #2, Crosspiece of Drain #3 and Juncture of Drains #1, #2, and #3

Figure 5 2E-2050 X
2E23A. Post-excavation view of drain #1. Camera facing north; 6' scale aligned N-S.

Figure 6 2E-2053 X
2E23C. Post-excavation view of drain #3. Camera facing west. 6' scale aligned E-W.

Figure 7 2E-1580 X
2E19D14. Junction of drains. 6' scale aligned N-S. Camera facing south.

Figure 8 2E-1972 X
2E23J2. Post-excavation shot. 6' scale aligned N-S. Camera facing south.

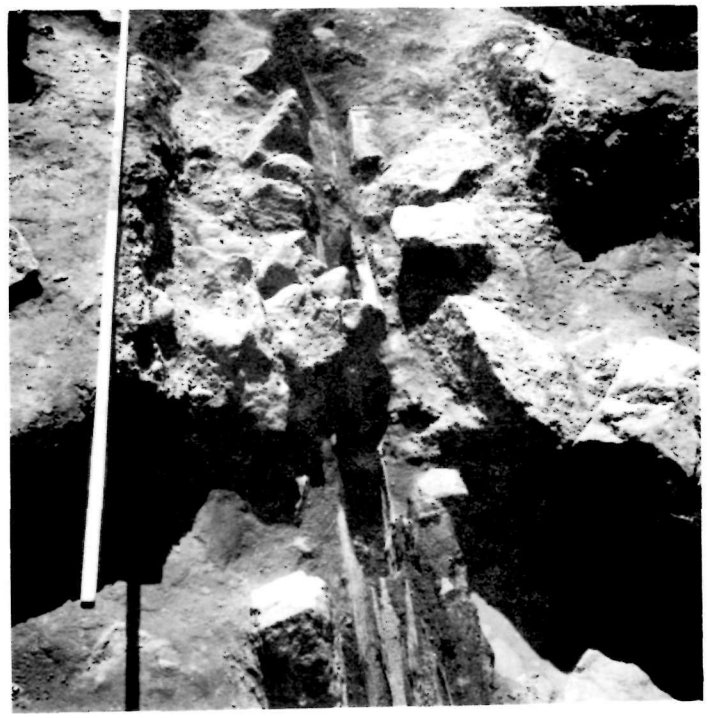
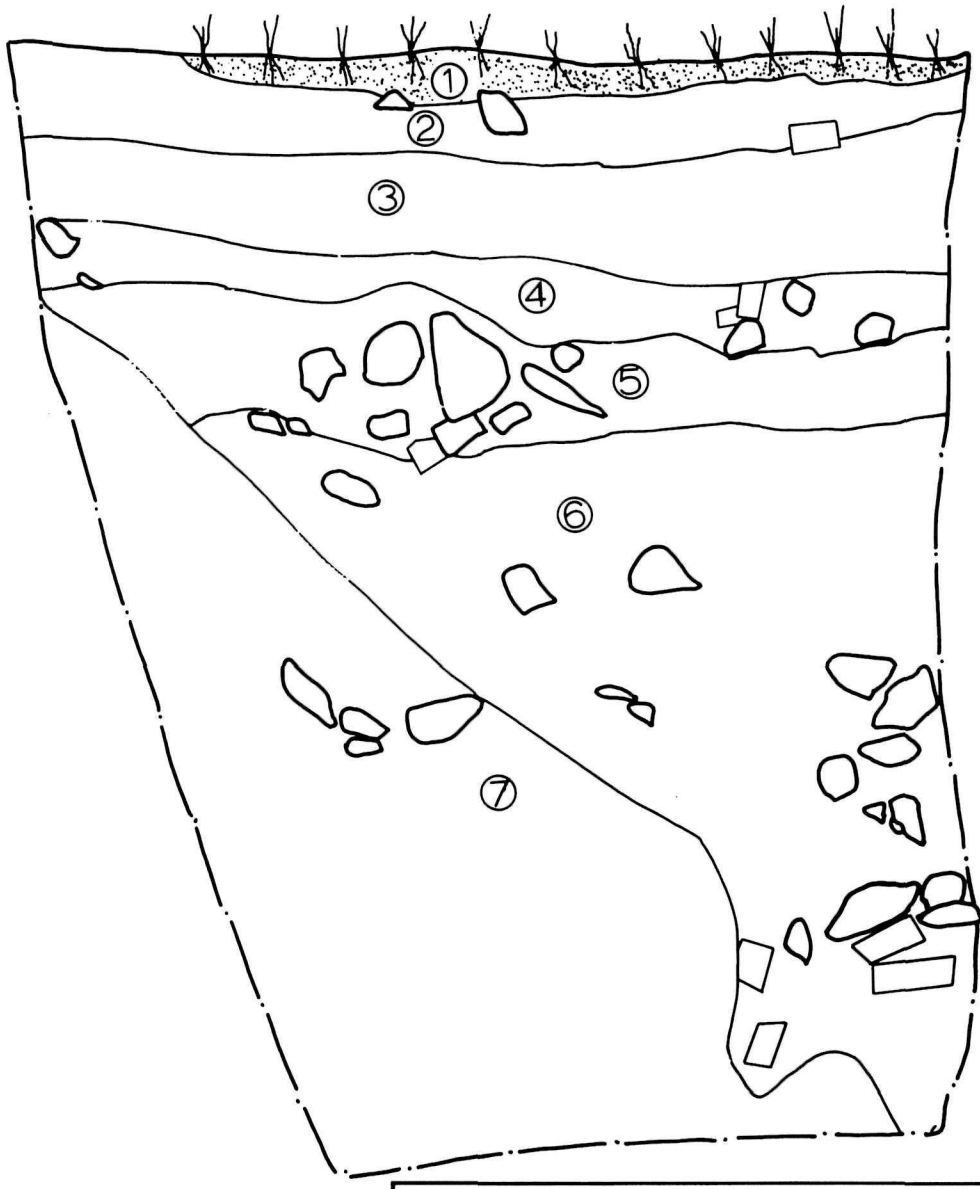


Figure 9 2E-3134 X
2E12D5. West end of drain #6 with stones along it. 6' scale aligned E-W. Camera facing west.

Figure 10 2E-3170 X
2E23J3. Post-excavation shot showing E-W wall. Camera facing west. 6' scale aligned E-W.



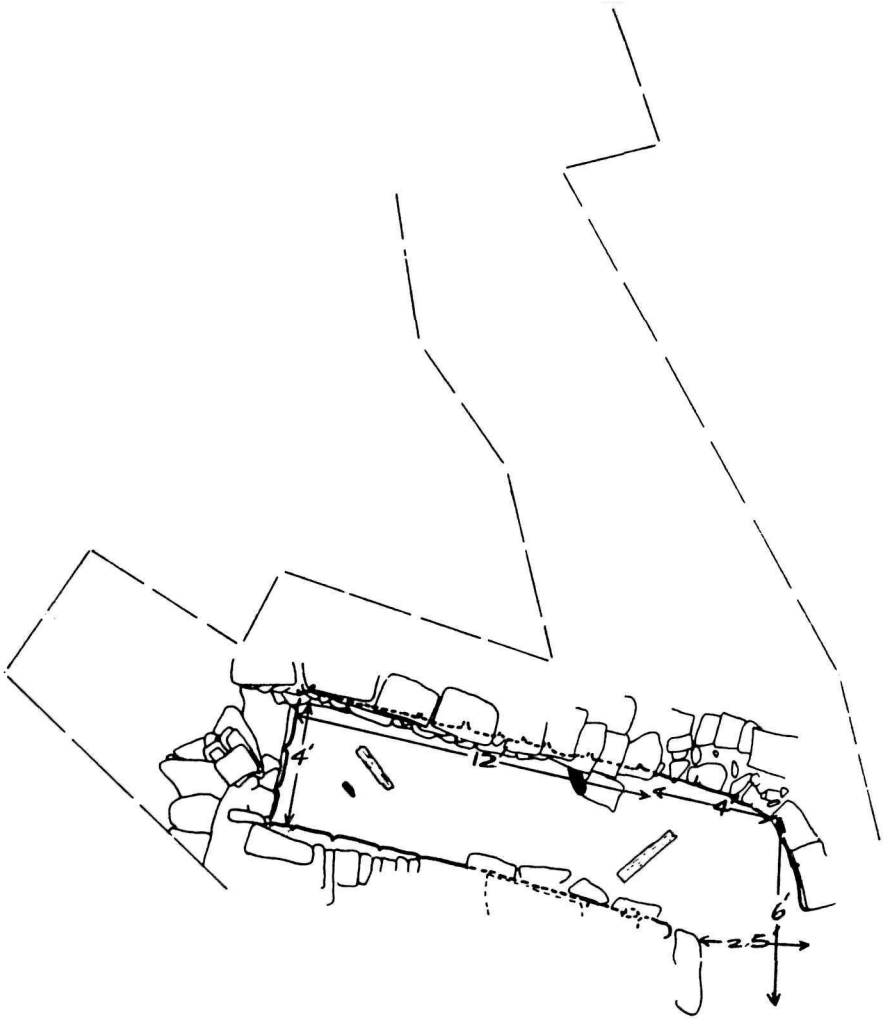
FORT BEAUSEJOUR N.B. SITE 2E

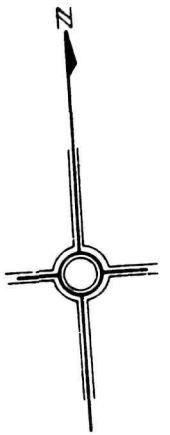
STRATIGRAPHIC DRAWING

OF SOUTH FACE 2E23D5,6,7,8 & 8

SCALE: 1"=1'-0"

11. Crossection drawing of south wall of 2E23D5, 6, 7, 8 (2E-68-102-40)





FORT BEAUSEJOUR N.B. SITE 2E

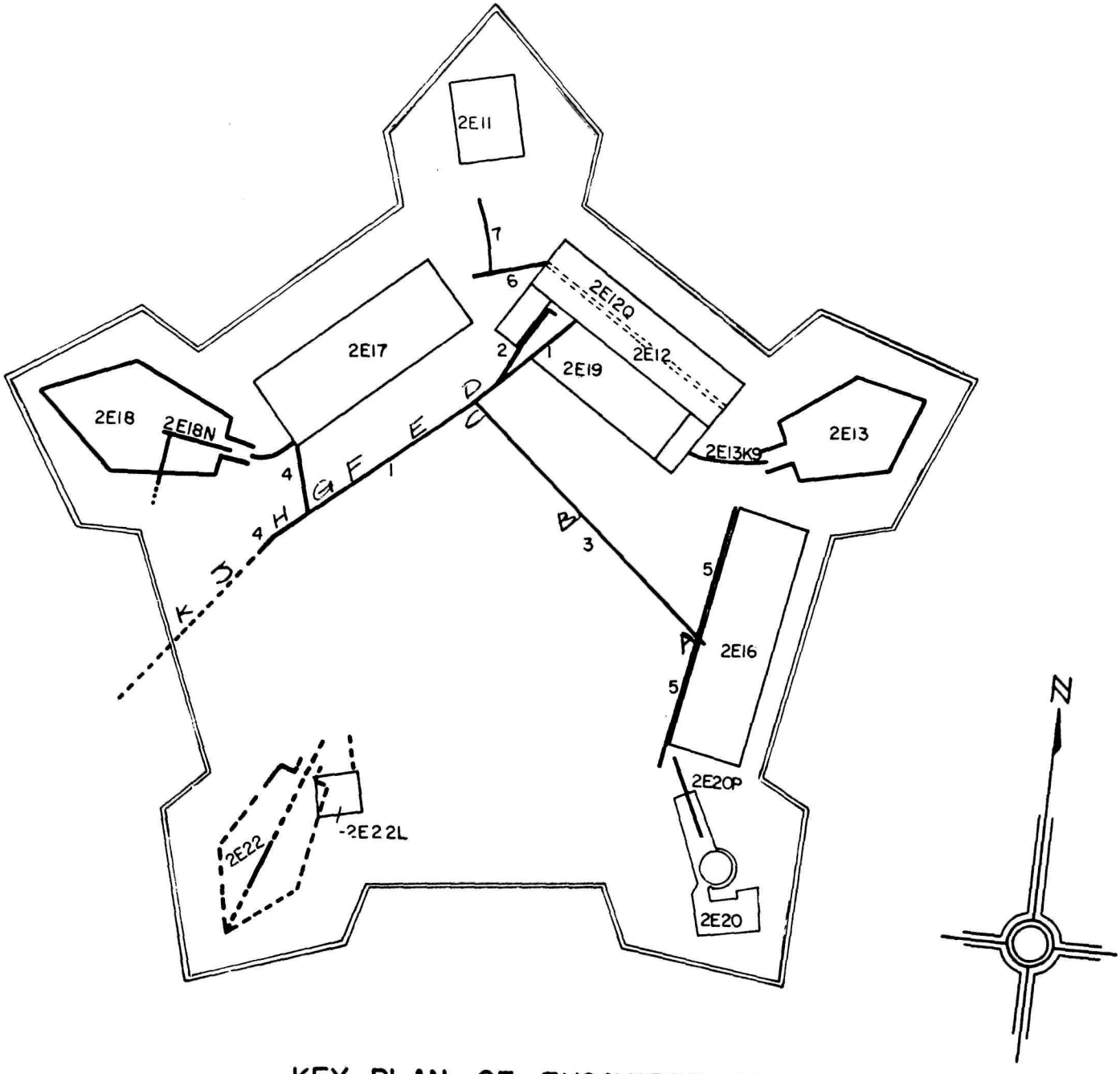
INTERIOR OF CURTAIN WALL CASEMATE
SUB-OPERATION 2E23J

0 1 2 4 6 8 10 FT.

LEGEND

STONE
METAL
WOOD
BASE OF WALL
EXCAVATION LIMITS
HIDDEN FEATURE

12. Plan of 2E23J (2E-68-102-7)



KEY PLAN OF EXCAVATED DRAINS

FORT BEAUSEJOUR N.B. SITE 2E

LEGEND:

L2.....7 drain designations

2E18, 2E13..... excavated operations

13. Chart of stratigraphy (From 2E-68-102-8) **Not To Scale**