FORT VANCOUVER EXCAVATIONS - VII

Northwest Bastion and Stockade System

by

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With Inventories of Cultural Materials

by

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Fort Vancouver National Historic Site

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I - INTRODUCTION

This is the seventh in a series of interim reports detailing the findings of the Fort Vancouver Archeological Project. Scope, purposes, and methods of the current project were outlined in the initial report of the series (Hoffman and Ross 1972). Briefly, our goals are to provide archeological data and interpretations to support a program of historic reconstruction at Fort Vancouver. In this sense, our research is adjunct to the historical and architectural studies that are also necessary for proposed reconstruction.

A further goal of our project is to provide a full detailing of the known archeological record at Fort Vancouver. This record has been, and will be, erased by the modern replacement of historic structures in their original locations. We are obligated to provide the American public with a full record of what is no longer in existence.

This report differs from our past efforts in being post hoc. The 1845 period Stockades and Bastion were reconstructed before writing this report. The archeological data for planning and reconstruction were included in preliminary reports prepared in late 1972 for the Historic Preservation Team of the Denver Service Center (Hoffman 1972a, 1972b). Thus, this report fulfills the goal of providing a detailed account of findings.

The Stockade system of Fort Vancouver has been subjected to various archeological tests over the years. The National Park Service began explorations in 1947 that served to locate the exact position of the Fort (Caywood 1947:8-14). Within the next few years, explorations uncovered multiple picket lines that indicated major reconstruction and expansion of the system during its 30-year use (Caywood 1952:27-30). The multiple picket lines were correlated with historic data to provide chronologically identified construction events (Hussey 1972: 1-12). The entire north wall was trenched in 1966 preparatory to reconstruction (Combes 1966). In the same year, a portion of the outer eastern wall was excavated prior to proposed reconstruction (Larrabee 1966). All past Stockade excavations were either exploratory or made for salvage purposes. With the exception of Larrabee's work, none were sufficiently detailed to archeologically identify various construction periods.

The matter of construction periods was of utmost importance to the current project. As a baseline for reconstruction, the National Park Service selected the period ca. 1845 when the Fort was at its height as an administrative and logistical center for the Hudson's Bay Company in western North America. While the general confirmation of the 1845 period Stockade was known from historic evidence, specific details of alignment and gates were not. In order to sort out details

of the 1845 period, all remaining Stockade lines of the general confirmation had to be investigated. This was done initially by testing areas critical to reconstruction plans; e.g. corners, gates and Bastion. Later, comprehensive and salvage excavations were directed at Stockade areas due for reconstruction. Comprehensive excavation was done by hand and resulted in a mass of data on construction events. Salvage excavation was done by machinery immediately before reconstruction. The latter method was unsatisfactory for gaining specific information, but it was not a total loss.

Several privy pits and large trash deposits were found along the Stockade lines during salvage excavation. We also found putative remains of a post-1845 Bastion in the southeast corner of the 1845 period Stockade. These features are not covered in the present report. Because of the wealth of artifactual data found, we believe these features deserve a separate report in the near future. We reiterate that the Bastion described in this report is of the 1845 period. It was a formidable structure at the northwestern corner of the Fort that preceeded and succeeded its ephemeral partner at the south wall.

Little artifact discussion is contained in the present report. Cultural materials recovered in excavations are best considered as a general trash sampling of Fort Vancouver. Unlike materials associated with other structures of the Fort, most of the artifacts found in the Stockade trenches were out of their functional contexts. They appeared to have been dumped into the trenches as simple refuse disposal. Much of the material was found in the upper levels and suggest the filling of sinking trenches with debris after collapse or removal of the Stockades above ground. Ironically, most of the material consisted of Hudson's Bay Company artifacts.

This seventh report also differs from past efforts in that it contains more direct input from Museum Technicians of the project. The Stockade graphics were prepared by Bryn Thomas and Hugh Bunten who excavated the trenches largely by themselves during Winter and Spring of 1972-73. Many of their ideas and hypotheses are incorporated in our analyses of construction events. However, interpretations of dated construction phases of the Stockade system remain the responsibility of Hoffman.

II - BASTION EXCAVATIONS

An arbitrarily oriented excavation unit 30 ft. square was placed over the known position of the Bastion and divided into quadrants. Three complete quadrants and a portion of the fourth were opened to expose HBC remains and more recent features (Fig. 1). Remains were attributable to 3 components or major occupations: Hudson's Bay Company, United States Army (Vancouver Barracks), and the National Park Service (Table 1). NPS features consisted of the west end of the reconstructed northern Stockade and portions of previous archeological excavations. The sole USA feature was the edge of rock ballast from a 1918 railroad spur. All other features were of HBC affiliation.

Foundation sills of the Bastion were large wooden puncheons set into prepared trenches. Three of the four original pieces were found badly charred. In combination with previous data (Caywood 1947: Pl. 3), we know the sills to have formed a 20-ft. square. We found each sill to be about 1.5 ft. wide and 0.8 ft. thick. Each had a rounded bottom with a flat top, and sides trimmed slightly flat. Remnants of the southwestern corner suggest that the sills were joined by a simple halving-joint. Due to previous excavations, we could not determine the sizes of the original sill trenches. However, soil sections to be discussed indicate that the sill bottoms rested about 0.50 to 0.85 ft. below the ground floor of the Bastion.

We were unable to find the eastern sill in our excavations (Fig. 1). This had been previously mapped and reported as being unburned. Presumably, a surface level doorway existed at the southern end of the eastern sill (Caywood 1947:Pl. 3). Outside of the eastern sill we did find the west ends of 3 northern Stockade lines. Trenches of the 3 lines intruded upon each other at various elevations, but the middle line appeared to have been the most recent (Fig. 2).

Internal features of the Bastion were few and located at elevations higher than the sills. The earthen cast of a wooden footing was found near the northern sill. While only 0.35 ft. thick, it measured 1.1 by 1.8 ft. on a side and still contained wood fragments. Its bottom was 0.5 to 0.7 ft. above the bottom of the adjacent sill. Like many of the internal features, the footing lay under a deposit of burned earth and debris.

Disjointed remains of a board were found near the center of the Bastion. The northern portion was 0.85 by 1.50 ft. and completely charred. The southern portion was unburned. It consisted of wood and concentrated wooden fragments that formed a pattern 1.1 ft. wide by 6.4 ft. long (Fig. 1). The southern portion overlay remains of 2 wooden stakes driven into a prepared hole. Only a few fragments

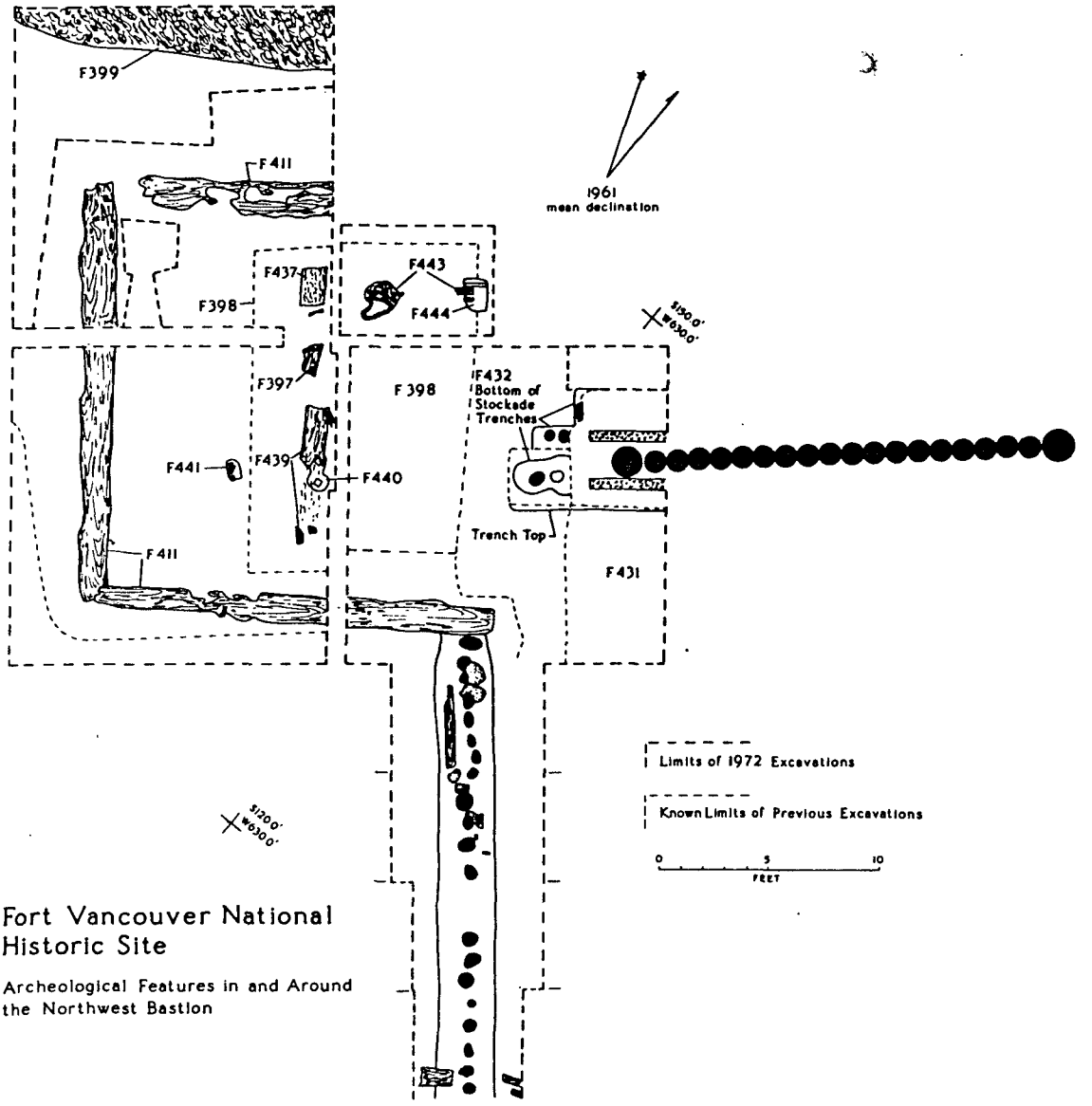

F399
F411
1961
mean declination
F437
F443
F444
F398
S15°0'
W6300'
F397
F398
F432
Bottom of
Stockade
Trenches
F441
F439
F440
Trench Top
F411
F431
Limits of 1972 Excavations
Known Limits of Previous Excavations
0
5
10
FEET
S1200'
W6300'
Fort Vancouver National
Historic Site
Archeological Features in and Around
the Northwest Bastion

Fig. 1

Table 1 - Archeological features found in Bastion excavation.

Feature	Description	Comp.
397	charred wood; portion of a collapsed stair stringer	HBC
398	remains of a scorched and debris-littered earthen deposit	HBC
399	area of angular rock fill; 1918 R.R. ballast	USA
411	charred wooden puncheons; Bastion foundation sills	HBC
431	portion of previous archeological excavation	NPS
432	west ends of 3 north stockade trenches	HBC
437	cast and remains of a wooden footing	HBC
439	wooden board remains; portion of a collapsed stair stringer	HBC
440	casts of 2 tapered wooden stakes driven into a prepared hole	HBC
441	casts of 2 tapered wooden stakes driven into a prepared hole	HBC
443	concentrations of wood fragments and scorched earth mixed with wood fragments	HBC
444	cast of a vertically oriented wooden board driven into a prepared hole	HBC

were found, but the shapes of the stakes were well preserved by earthen casts. The 2 were oriented north-south and set one ft. apart on centers. Each was about 0.3 ft. square at its upper limit and tapered to a blunt point. Lengths were 1.9 and 2 ft.

Another set of stake casts was found exactly 4.0 ft. west of the first set (Fig. 2). These were also oriented north-south, but were only 0.6 ft. apart at their centers. Upper portions of the second set had been removed during previous excavations (Fig. 1). As seen by us, each stake was 0.15 to 0.20 ft. on a side at its upper limit. The stake casts were 0.6 and 0.7 ft. long, although they appeared to have been about 2.0 ft. long originally. Like the eastern set, the western stakes were driven into and below a prepared hole.

A well-formed plank cast was found abutting the former position of the eastern sill (Fig. 2). The cast was oriented so as to have been perpendicular to the interior margin of the sill. Driven vertically into and below a prepared hole, the cast represented a plank that had been one ft. wide, about 0.15 ft. thick, and at least 2.3 ft. long. Top of the cast was covered by unburned fragments of 2 rectangular wooden pieces. Immediately west was a small concentration of burned earth mixed with unburned wooden fragments (Fig. 2).

Five soil sections were prepared from the Bastion excavations in order to gain a fuller understanding of the disturbed remains. Orientations of the sections are shown on Fig. 2 and the sections are detailed on Fig. 3. Layer 1 was the surface and sod level of 1972. Contact with layer 2 was well defined, whereas contact with layer 3 was not always distinct. Layer 2 consisted of compacted, fine-grained sand that was a modern deposit probably associated with NPS construction of 1966. Layer 3 was highly compacted clay and rounded gravels from Vancouver Barracks road metalling of 1918-19. Layer 4 was compacted coarse sand with bands and pockets of clay. It appeared to have been subsurfacing for the above road. Contact between layers 4 and 5 was not always distinct.

Layer 5 consisted of packed and powdery fine silts from a late 19th Century flood of the Columbia River. This deposit has been previously discussed as a temporal marker in the archeological record of Fort Vancouver (Hoffman and Ross 1974:4). Since it was probably formed by receding slack water, contact between layers 5, 6 and 7 was not always distinct. Layer 6 was a highly mixed deposit of silty clays and gravels with bands and pockets of burned earth, charcoal, ash and unburned wood fragments scattered throughout. This layer was found only inside of the sills and undoubtedly represented part of the Bastion destruction by fire. Layer 7 was mixed clay and ash found only outside of the sills. This also represented burning of

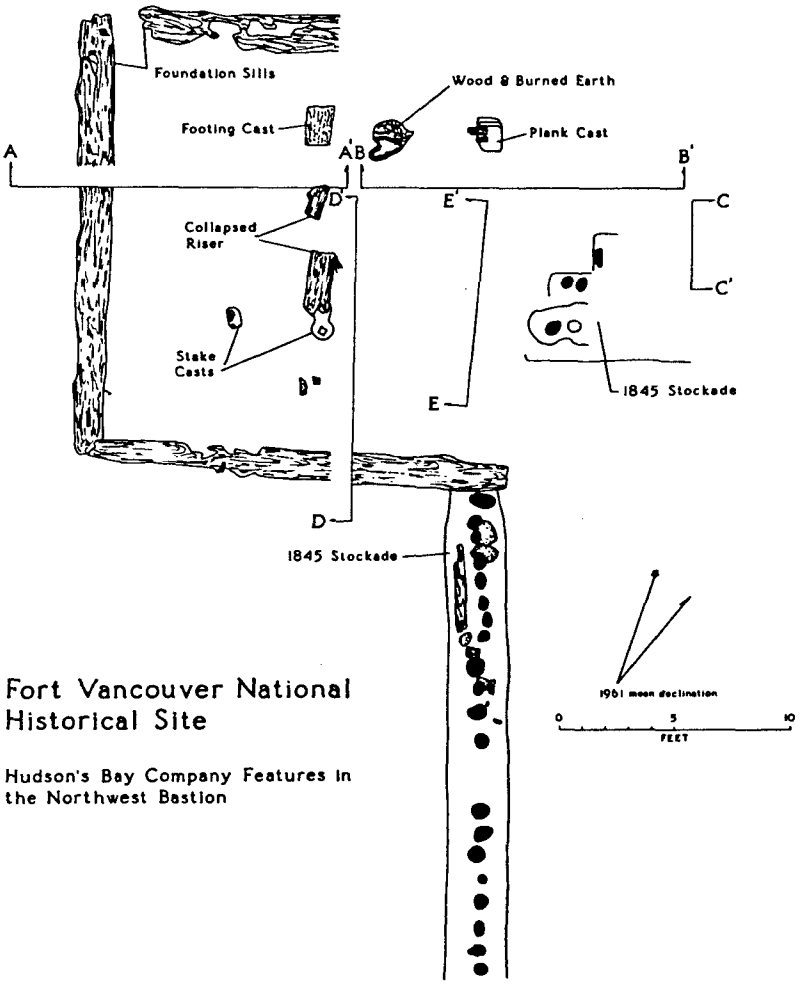
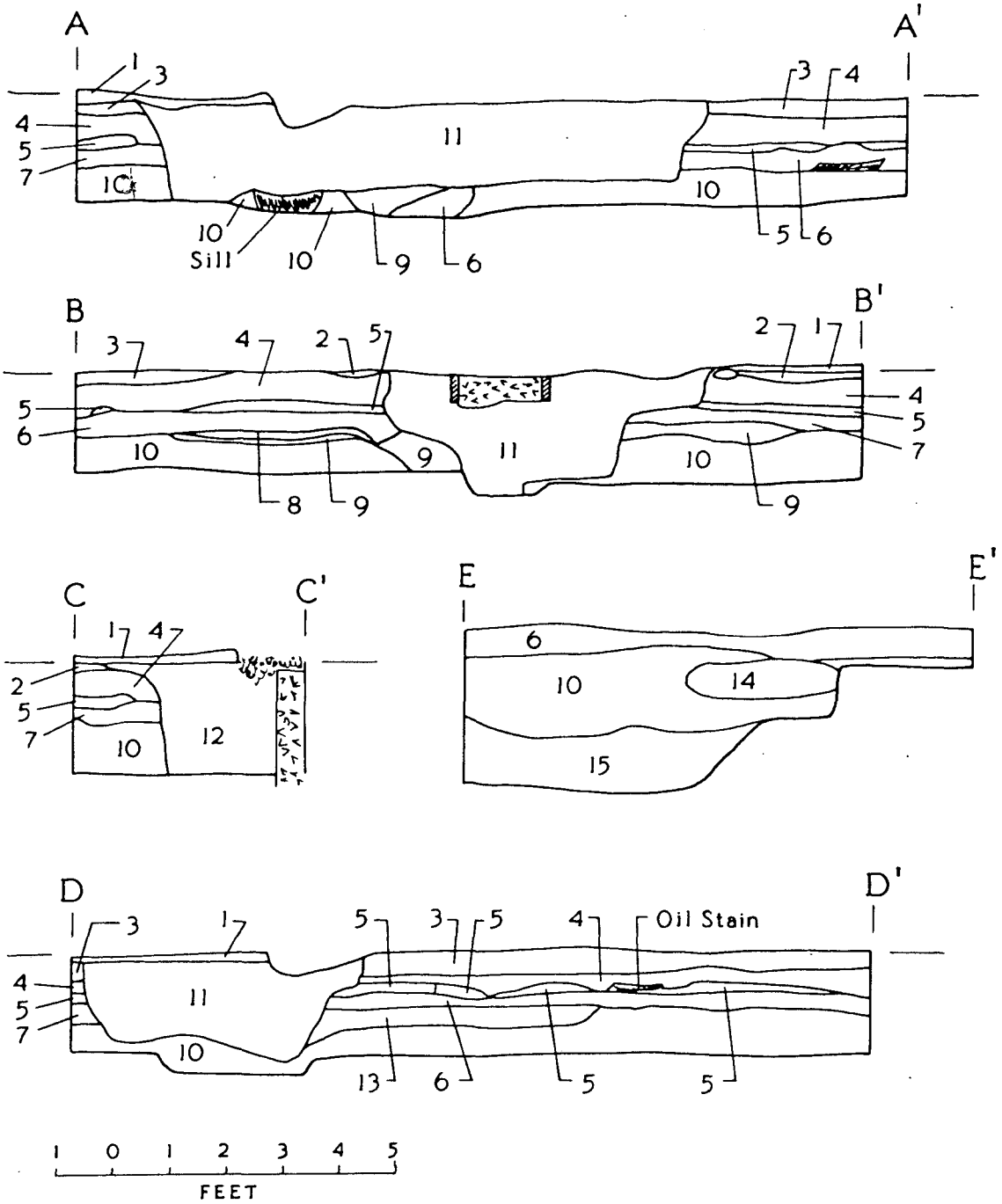

Foundation Sills
Wood & Burned Earth
Footing Cast
Plank Cast
A
A'
B
B'
C
C'
D
D'
E
E'
Collapsed Riser
Stake Casts
1845 Stockade
1845 Stockade
1961 mean declination
0
5
10
FEET
Fort Vancouver National Historical Site
Hudson's Bay Company Features in the Northwest Bastion

Fig. 2



Soil Sections From Excavation of NW Bastion

See HBC Feature Map for orientations of sections

Fig. 3

the Bastion, but it did not contain the burned and unburned debris of layer 6. Unfortunately, previous excavations destroyed all contact between layers 6 and 7 (Fig. 3).

Layer 8 consisted of silty clay and gravels that were loose and powdery like those of layer 6. Layer 9 was mixed brown and buff silty clay and gravels. This mixture was backdirt from the trenches dug for installation of the Bastion sills. Layer 10 was a moist and loose deposit of brown silty clays containing occasional bits of wood, charcoal and HBC specimens at its upper limits and adjacent to the sills. Layer 11 consisted of highly mixed soils that marked the backfilled excavations of 1947. It was quite distinct except at contact with layers 3 and 4. In section B-B', layer 11 contained a modern concrete slab used to mark the horizontal position of the eastern foundation sill (Fig. 3).

Layer 12 was the machine-cut and backfilled trench of the 1966 Stockade reconstruction. It consisted of a concrete footing and large, washed gravels. Layer 13 was found only adjacent to the south sill. It was a mixture of buff and brown silty clay and gravels almost identical to layer 9. Like layer 9, it represented backdirt from a prepared sill trench. Layer 14 was a small compacted lens of native soil and underlaying flood plain gravels. Layer 15 consisted of culturally sterile, buff gravels of the flood plain.

While the archeological data are scanty, the combination of wooden remains and observed soil sections provide a means for interpreting certain features not previously recognized.

III - BASTION ARTIFACTS

Little in the way of functionally significant cultural material was recovered other than cannister shot. We are uncertain as to what artifacts were found in 1947 other than a large butterfly hinge and several cock keys (Caywood 1947:Pls. 21, 24). Due to the limited area of our excavations and the disturbances from previous explorations, there is no rationale for distributional analysis of materials. Rather than extensively describing the artifacts, we have simply inventoried them as Table 2.

Table 2 - Cultural materials found in Bastion excavation.

Artifact Category	Sub-Total	Total
CERAMIC WARES		56
Earthenware Fragments	46	
Stoneware Fragments	8	
Vitreous China Fragment	1	
Porcelain Fragment	1	
CERAMIC OBJECTS		209
Kaolin Pipe Fragments	209	
GLASS OBJECTS		443
Bottle Glass Fragments	317	
Unidentified Curved Glass Fragments	23	
Window Glass Fragments	15	
Beads	88	
METAL OBJECTS		1439
Square Nails	1016	
Wire Nails	155	
Screw	1	
Bolts	5	
Bolts with Nuts	2	
Bolt with Washer	1	
Nuts	6	
Buttons	2	
Buckle	1	
USA Dog Tags	2	
Toothpaste Tube Fragments	2	
Bottle Cap	1	
Tent Grommet	1	
Chain Link	1	
Metal Rings	2	
Cartridge Cases with paper blanks	2	
Cartridge Case	1	
.58-caliber Minie Ball	1	
Bullet	1	
Shot	4	
Cable Fragments	16	
Wire Fragments	102	
Unidentified Metal Objects	8	
Unidentified Metal Fragments	106	
STONE OBJECTS		3
Slate Tablet Fragments	2	
Flaked Stone	1	

Table 2 (cont'd.)

Artifact Category	Subtotal	Total
WOODEN OBJECTS		10
Dowels	8	
Stakes	2	
MISCELLANEOUS OBJECTS		15
Brick Fragments	10	
Brick Tile Fragment	1	
Mortar Fragments	3	
Cigarette Wrapper	1	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		2175

Non-Artifact Category	Total
Bone	45
Charcoal	7
Charred Wood Fragments	25
Clinkers	4
Coal	7
Wood Fragments	27
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	115

IV - BASTION INTERPRETATIONS

Historical evidence indicates that the Bastion was a 3-storied structure built in the post-in-sill style generally favored at Fort Vancouver and other HBC posts. While the total height of the timbered building is not known, its upper portions were elevated above the adjoining Stockade. The lower 2 stories were 20 ft. square in plan, and the third floor was octagonal in plan with a peaked roof. The lower 2 stories were reportedly "loopholed" for small arms fire. Actually, ports for small arms were narrow horizontal slits. The third floor was the gun deck which held 8 iron 3-pounders. Each gun had its own port and shutter (Hussey 1972:38-44). Interestingly, the guns and carriages were naval models operated by training tackle (Hussey 1973:10-14). The Bastion was built during February of 1845, and the gun deck was operable by late March. It stood until June of 1860, or shortly thereafter (Hussey 1972:36-37).

Archeological evidence of the Bastion frame consisted solely of the massive foundation sills. These formed a plan 20 ft. square at the northwestern corner of the Stockade. The plan was offset from the corner so that the base of the Bastion was 13 ft. north of the northern Stockade, and 18 ft. west of the western Stockade (Fig. 4). Thus, the elevated gun deck commanded a clear field of fire along 2 landward sides of the Fort, the river front, and the entire Fort interior. Despite the Bastion's excellent position, there is no historic evidence that the guns were ever used combatively (Hussey 1972:36-37).

As previously noted, the Bastion was destroyed by fire. Such a sizable wooden structure must have sustained an intense heat. Yet, archeology disclosed a lack of extensive debris. Neither was there any widespread evidence of intensive soil burning. It seems evident that burned remains of the Bastion were largely removed during a general cleanup of the Fort site sometime after 1860. This is a situation we have observed before (Hoffman and Ross 1974:4, 7) that can be attributed to USA action, possibly to prepare the area for pasturage.

The few features observed in excavation supplement the historic interpretations of the Bastion, especially internal features. The soil sections previously described indicate that the upper part of layer 10 was part of the old HBC surface. The layer was essentially native soil found inside and outside of the Bastion, but containing cultural debris. Field records indicate that the wooden features rested either on or in this layer (e.g. section A-A' of Fig. 3). Inside of the sills, dips in layer 10 were filled by layers 9 and 13 which we interpreted as backdirt from trenches prepared for the sills.

We interpret layers 9, 10 and 13 as a prepared surface inside of the sills. In other words, the ground floor of the Bastion was simply an earthen surface that lay at about the same elevation as the surrounding HBC occupational surface.

In this context, the wooden archeological remains are more easily understood. We interpret the paired stake casts in the southwestern sector of the Bastion floor as holding devices. Their alignment and spacing suggest that they held a horizontal piece about 4 ft. long and less than one ft. wide. Most likely, this piece was a log or timber that braced the bottom of a stairway. Additional stairway evidence consists of the burned and unburned wooden pieces immediately north of the eastern stake casts (Fig. 2). These pieces appear to represent a closed stair stringer (labeled "riser" on Fig. 2) that was about one ft. wide. Unfortunately, we could not find the western stringer since its probable position was destroyed by previous excavation (Fig. 1).

The footing north of the collapsed stringer probably supported an upright post at the second floor stair landing. The neat alignment of stake casts, stringer pieces and footing offer firm evidence for the eastern side of a stairway oriented south to north, and leading from the ground to the second floor (Fig. 2). As measured from the ground floor anchor, the stairway may have been 4 ft. wide. While we are not certain of the heights of the Bastion stories, it is evident that the stairs were steeply angled.

Remains of the stairs were largely offset west of the north-south axis of the foundations (Fig. 2). We would speculate that stairs from the second to third stories were similarly offset and positioned immediately over the lower stairs and that the upper stories were also elevated from south to north. This arrangement would leave sufficient space east of the stairs to hoist guns and carriages up to the third floor.

It is possible that the upright post on the footing near the north wall also served as support for a narrow gallery that paralleled the Bastion interior at the second floor. It is difficult to support this hypothesis since areas comparable to that of the footing were largely destroyed by previous excavation (Fig. 1). However, some sort of second floor existed. In light of our speculations on the second floor stair, it may well have been only a narrow gallery.

The plank cast in the northeastern sector of the Bastion floor may also have been a supportive device. Measurements indicate that the eastern edge of the cast abutted the interior margin of the eastern

sill (Fig. 2; Caywood 1947:Pl. 3). The plank may have been one of the supports for a wooden firing step about one ft. wide that gave access to the ground floor musket slits. Again, the hypothesis cannot be strengthened since comparable areas abutting sill interiors were cut away in previous excavation (Fig. 1). Debris overlaying the plank cast, as well as the concentration of wood and burned earth west of the cast, are difficult to interpret. They lay on the Bastion floor and may have been pieces of collapsed superstructure.

In the recorded soil sections, it can be seen that the ground floor of the Bastion was largely overlaid by layer 6; in one area it was overlaid by layer 8 (Fig. 3). Outside of the Bastion the old occupational surface was overlaid by layer 7. Both layers 6 and 7 contained extensive evidence of burning, yet they rested on unburned surfaces. It is evident that neither represented burning in situ. Layer 6 was a heterogeneous mixture of burned and unburned cultural debris, whereas layer 7 was more homogeneous in composition. These are phenomena that are familiar to the writer (among many others) from excavations in Northern Plains earthlodges (c.f. Hoffman 1970: 34, 37, Pl. 3b). Layer 7 was simple burning residue, whereas layer 6 represented a collapsed structure originally composed of earth and wood. The composition of layer 8 was most similar to the unburned portions of layer 6; both appeared to derive from the same source.

Returning to the analogy of earthlodges, layer 8 represented earth trickling down onto the Bastion floor from some part of the superstructure that was composed of earth and wood, and was starting to collapse. Layer 6 was the partially burned remains of the same superstructure as found collapsed on the ground floor. No evidence of large members of the inferred superstructure were found in excavation. This may be due to the USA cleanup previously discussed, or the actual removal of the large members prior to burning. We note that all soil layers above the burned layers represent post-HBC activity (Fig. 3). It is possible to incorporate earth into various parts of a defensive structure for purpose of fire suppression. In the case of the Fort Vancouver Bastion, the most obvious fire potential existed on the gun deck where sparks of partially burned black powder would be scattered by recoiling guns. Thus, we hypothesize that the gun deck or third floor was earthen covered.

Our hypothesis of the collapsed gun deck resting directly on the ground floor leaves no provision for the second floor. Indeed, we found no direct archeological evidence attributable to a second floor. Either this part of the Bastion was removed prior to burning or, as previously suggested, the second floor was merely a narrow gallery that left no observable archeological remains. Due to prior excavations and presumed USA cleanup of the area, it may not

be possible to fully satisfy our superstructure hypotheses on archeological evidence alone.

The evidence is scanty and indirect, but we believe it does reflect certain key features of the Bastion interior. Specifically, it reflects the location and orientation of the stairways, the composition of the ground floor and the gun deck, as well as the presence of a firing step at the ground floor and a narrow gallery at the second floor.

V - STOCKADE EXCAVATIONS

Current and past excavations revealed 9 stockade lines of varying lengths at Fort Vancouver. The multiple lines have been interpreted as periods of fort expansion (c.f. Hussey 1972:2-12). For purposes of this discussion we have illustrated the known lines as Fig. 4 and labeled them thusly: north line B-G; south lines N-H and O-I; west lines A-O, C-M and D-L; east lines E-K, F-J and G-I. Each letter represents a known intersection or terminus of lines. As will be discussed, several lines contain various construction periods.

At the time we began investigations, the northern stockade was already reconstructed from a few feet east of point B to point G and south to the north wall of the Bakery (Fig. 4). Archeological remains of the north line are detailed elsewhere (Caywood 1955:sheets 7-9 of map 2; Combes 1966). These excavations found multiple picket lines along the northern stockade that indicated continued repair and construction by HBC. The eastern line south of point G was also previously tested in the vicinity of the Bakery (Caywood 1955:sheet 9 of map 2; Larrabee 1966) revealing multiple periods of HBC construction. The various archeological investigations of the stockades are condensed on Fig. 4. Wide solid lines show areas previously tested but not opened during the current project. Dotted lines indicate areas that have not been archeologically tested, but are inferred to contain stockade remains.

Hand and machinery excavation was used to open lines A-N, N-H and that portion of line G-H not previously opened. Tests were made in line O-I and at all southern intersections except points O and I; the latter were known from past explorations (Caywood 1955:sheets 1 and 6 of map 2). A southern portion of line E-K was also opened during investigation of the nearby Fur Store. A northern portion of line F-J was previously opened and described (Hoffman and Ross 1972:15-17).

Very little digging was done along the grid system generally used for our building excavations. Most exposures were made by trenching along known or inferred stockade lines. The arbitrary trenches were generally 5 ft. wide, and divided into 5 ft. lengths. The lengths were sequentially numbered as units of a particular exposed line. Detailed drawings of the stockade remains are shown in Figs. 5-52. A standard format is used on the foldout figures. The plan view of the exposed HBC trenches is at the center of each page; archeological excavation limits are not shown. Below the plan is a continuous, matching, longitudinal view. Numbers at the ends of the longitudinal views indicate the depths of the HBC trenches below present day surface. Above the continuous plan are selected lateral

Known Stockade Lines of Fort Vancouver

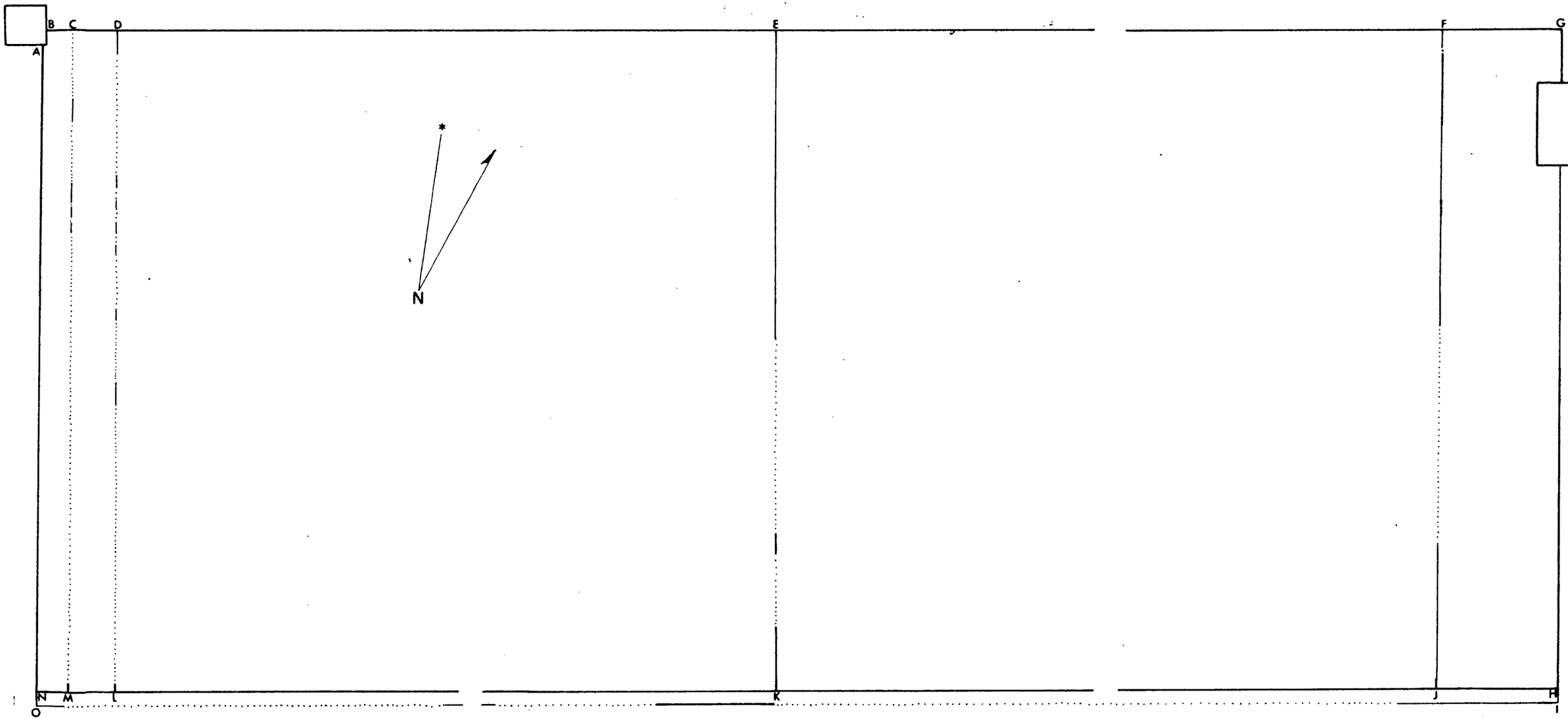


Fig. 4

views of the trenches. Positions of the lateral views are indicated by tick marks at the plan and longitudinal section. On north-south trenches, the lateral sections are oriented looking north; lateral sections of east-west trenches are viewed east. Numbers in the lateral sections refer to construction events to be discussed. Those stockade portions dug by machinery are illustrated, but do not contain the information of the hand dug portions.

Our investigations indicated that the standard HBC method for building a stockade was to simply dig a trench, set posts and backfill the trench. However, the complex mass of remains clearly showed that this method was repeatedly used within the same general trench lines. Removal or replacement of large kingposts usually left large impressions in the trenches. Often, the former positions of kingposts could be observed as regularly spaced dips in trench floors. Preservation of smaller posts or pickets varied widely. While some of the rotted posts appeared to retain their original forms, other pickets were observed only as impressions left in the trenches. There seemed to be no ready correlation between the age or location of a post and its state of preservation.

In order to better discuss the remains, we have included a glossary of terms relevant to stockade components either observed or inferred (Table 3). The only unusual word of the list is "fova" which we have coined to describe a unit of measurement consistently used by the builders of the Fort Vancouver stockades.

In addition to stockade remains, we observed several archeological features intrusive to the lines (Table 4). Most of these were Vancouver Barracks features familiar to us from other excavations. The wooden drains, for instance, were either the same or very similar to those found during excavation of the Chief Factor's House (Hoffman and Ross 1973:6). The waterline trenches were the same as those observed during investigations of the Sales Shop and Magazine (Hoffman and Ross 1974:7, 14). Many of the USA intrusions are not fully illustrated; their positions within the HBC trenches are noted by their feature numbers.

Two HBC intrusions are of particular interest since they appear to be part of a Fort Vancouver structure not previously observed archeologically. Narrow stone foundations were located in south stockade units 81 and 85. One was set in a prepared trench, while the other was spanned by a puncheon and associated with brick. Both were oriented north-south (Figs. 35, 36). The foundations were 19.5 ft. apart on centers; culinary refuse of butchered bones and ceramics were recovered adjacent to the stoneworks. The archeological location of the foundations corresponds to the historical location of a small

Table 3 - Stockade glossary.

Term	Definition
trench	linear excavation designed to contain subsurface portions of the stockade when backfilled.
line	a length of stockade remains as observed or inferred between 2 defined points. A general line may include specific lines.
kingpost	large diameter wooden post inferred as the primary supportive device of a stockade. It is set upright within a trench, but at a greater depth than a picket.
picket	small diameter wooden post used to fill spaces between kingposts. It is set upright within a trench, but at a higher elevation than a kingpost. Pickets are usually circular in section, but may be trimmed to flat faces.
cornerpost	a kingpost located at the intersection of 2 lines.
gatepost	large wooden post set upright in a trench as vertical framing for a surface level opening in the stockade. Gateposts are usually rectangular in section.
runner	horizontal wooden piece set in a trench to align picket butts.
waler	inferred horizontal wooden piece that connected kingposts above ground; not archeologically observed. Purpose is to align and hold pickets which are attached to walers above ground.
fova	unit of linear measurement used for planning lines and setting kingposts at Fort Vancouver; equal to 13 modern English feet.
period	an archeologically identifiable event of construction or replacement in the lines. Consists of trench excavation and post placements which may or may not be intrusive to similar but discrete excavation and placements.
phase	a major construction event consisting of one or more periods that can be identified in various portions of the line.

Table 4 - Stockade intrusions.

Feature	Location	Description	Comp.
204	south stockade unit 99	wooden drain set in a prepared trench	USA
319	west stockade unit 51; south stockade units 77 - 84	single trench prepared for a waterline	USA
332 442 517	S160 x W190; west stockade unit 24; east stockade unit 17	single trench prepared for a waterline, found in 3 excavations; F442 includes wire wound wooden pipe	USA
427	west stockade unit 4	wooden piece overlaying stockade trench	USA?
445	west stockade unit 26	small deposit of Vancouver Barracks trash	USA
452	south stockade unit 87	wooden drain set in a prepared trench	USA
453	south stockade unit 81	stone building foundation	HBC
454	south stockade unit 85	stone and wood building foundation	HBC
455	west stockade unit 58	lateral trench partially filled with pea gravel	USA or NPS
none	south stockade unit 89	break in south wall of trench	-
none	south stockade units 95/96	break in south wall of trench	-

building variously known as a watchman's house or a porter's lodge (Hussey 1957:153-156). Since this was a small, short-lived structure of the post-1845 period, it has received little historical attention.

For economy and clarity of presentation, we have condensed our discussion of remains to analytical form. The analyses are based on periods of construction as postulated from our observations of the remains. The postulates are based on discrete time and space, specifically stratigraphic and non-stratigraphic spatial relationships. The periods are indicated on the stockade drawings by numbers on the lateral sections (Figs. 5-52).

West Stockade Period I

Defined stratigraphically and by spatial relationships of kingposts.

Data

Trench Located only between points A and N (Figs. 4-15), the trench of this period was the deepest of line A-N. Depth ranged from 3.8 ft. below present surface in unit 57 to 5.4 ft. below surface in unit 13 (Figs. 7, 14). Fill generally consisted of marbled or layered black and buff soils; little cultural material was found. Northern end of the trench terminated under the south sill of the NW Bastion (Fig. 2).

Posts Eighteen kingposts and/or impressions were observed for this period. All were spaced at intervals of fovas in relationship to each other and to points A and N. Butts of the kingposts were generally set below the trench floor. Only 44% of their measurable diameters fell within one sd of their mean (Table 5).

Pickets were identified by the inclusion of their butts within the trench of this period. Usually they were located along the west side of line A-N as noted in units 23 through 48 (Figs. 8-12). Of the measurable diameters, 70% fell within one sd of the mean (Table 5).

Other Many long wooden runners were found in this period (Figs. 7-11). These features were not found in later periods of line A-N.

Hypotheses

This period originally had 25 kingposts, including the cornerpost at point N, that supported 24 panels of pickets. Each panel was one fova long; 24 fovas equal 312 ft. Wooden runners were placed along one side of the partially backfilled trench in order to align picket butts during the balance of backfilling. This prevented the uneven twisting of above ground walers to which the pickets were attached.

Inferences

Stratigraphic position of the period 1 trench indicates that this was the initial construction of line A-N. Line A-N was measured at ground level and found to be 311.75 ft. long (Hoffman 1972b). Since the cornerpost at point N was one ft. in diameter (Fig. 15), the actual length of line A-N was 312.25 ft. This length, plus the 18 kingposts spaced at fova intervals, support the hypothesis of 25 original kingposts holding 24 panels of pickets.

Period 1 is associated with the NW Bastion as shown by the intersection of trench and Bastion wall at point A. Since the Bastion wall overlay the extreme northern end of the trench, the period 1 Stockade was probably earlier in time than the Bastion. This is confirmed by historic evidence which shows that Stockade A-N was completed 7 February 1845, whereas Bastion construction started after that date (Lowe in Hussey 1972:7-8, 36).

West Stockade Period 2

Defined by stratigraphy and picket positions.

Data

Trench Located between points A and N, and slightly east of point N (Fig. 15). Northernmost 45 ft. of period 2 trench could not be identified (Figs. 5, 6) because of presumed removal by previous excavation (c.f. Caywood 1955:sheets 4 and 7 of map 2). Trench of this period was intrusive to that of period 1 and largely displaced the latter (Figs. 6-15). Period 2 trench was generally dug at a higher elevation than that of period 1. Depths ranged from 2.8 ft. below present surface in unit 36 to 4 ft. below surface in unit 25 (Figs. 9-10).

Fill generally consisted of light to dark brown silty clay with buff intrusions, but no evident layering. Many wooden fragments were present and more cultural material was noted than in the fill of the period 1 trench. Period 2 fill appeared to be largely a re-use of fill from period 1. At point N, the trench turned 90° east (Fig. 15).

Posts No kingposts were identified for this period.

Pickets were identified by inclusion of their butts within the trench of this period. They were generally higher in elevation than pickets of the previous period. Where multiple picket lines existed in line A-N, pickets of period 2 were usually located along the east side of the line as shown in units 23 through 60 (Figs. 8-14). While only

59% of measurable diameters fell within one sd of the mean, 96% were within 2 sd's (Table 5). Period 2 pickets turned 90° east at point N and continued into the inner south stockade (Fig. 15).

Hypotheses

Kingposts may have been used in this period. With 3 possible exceptions, period 2 pickets do not exactly overlay positions of period 1 kingposts. If kingposts were used in this period, they were largely set in the same positions as those of period 1., or the period 1 kingposts were simply reused during period 2.

Inference

Period 2 was the second major construction of Stockade A-N. The massive trench displacement and large number of pickets indicate that the period was more than simple repair.

West Stockade Period 3

Defined by stratigraphy and discrete space.

Data

Trench Located between points A and O, but not directly observed at point O during current excavations. Period 3 trench consisted of 4 contiguous but isolated sections in line A-N, plus line N-O (Figs. 6-7, 15). Contiguous sections of line A-N were intrusive to the trench of period 2 and higher in elevation. Trench in line N-O was not intrusive, but a single discrete trench. Trenches of lines A-N and N-O were associated by stratigraphy, as well as size and contents. Depths ranged from 2.4 ft. below present surface in unit 17 to 3 ft. below surface in unit 14 of line A-N. In line N-O, depth was 2.95 ft. (Figs. 7, 15). Fill consisted of black silty clay that was presumed to be highly organic.

Posts No kingposts were identified for this period.

Pickets were identified by inclusion of their butts within the period 3 trench. In line A-N they were always higher in elevation than previous pickets; in line N-O they were the only pickets. In line A-N they paralleled the west side of period 2 pickets as seen in units 12 through 17 (Figs. 6, 7). Despite a small sample, 78% of measurable diameters fell within one sd of their mean (Table 5).

Other Line A-N was 24 fovas long, and line A-O was 24 1/2 fovas long. Thus line N-O was 1/12 of line A-O (q.v. Chap. VII, notes on the fovas).

Hypotheses

Period 3 in line A-N represented repair sections about 7 to 14 ft. long. Line N-O was an extension of line A-N. If kingposts were used in this period, they were the same as those used in periods 1 and 2.

Inferences

Period 3 was the last recognizable construction of Stockade A-O. Any subsequent work consisted of simple picket replacement that did not involve trenching. This period represented repair and lengthening of the outer west stockade in order to intersect the outer south stockade (Fig. 4). Since the repair is limited and relatively minor, much of period 2 stockade must have been standing during period 3.

East Stockade Period 1

Defined by stratigraphy and fova relationships.

Data

Trench Located in line G-H but observed only from point H to 18 ft north (Fig. 16). Trench of this period was the deepest of line G-H. Depth ranged from 3.65 ft. below present surface in unit 3 to 4.50 ft. in unit 4 (Fig. 16). Fill consisted of black and buff soils that were marbled and compacted.

Posts The large post at point H was a cornerpost shared by lines G-H and N-H. One other kingpost was stratigraphically identified in unit 4 at a distance of 1 1/2 fovas north of point H. Three additional kingposts were identified by their intervals of 1, 2 and 5 fovas from the one in unit 4. These were located in machine-dug units 6, 9 and 22 (Figs. 17, 19). These 5 kingposts had the largest diameters noted during current investigations (Table 5).

No pickets were identified for this period.

Other Line G-H was 24 1/2 fovas long. Distance from the north wall of the Bakery to point G was 2 fovas (Fig. 4). The north-south dimension of the Bakery was 3 fovas as measured on footing centers (Hoffman and Ross 1972:Fig. 4). Distance from the south wall of the Bakery to the first kingpost north of point H was 18 fovas. Distance from point H to the southernmost kingpost of this period was 1 1/2 fovas (Fig. 16).

Previous Data

Trench Excavations of Larrabee (1966) in line G-H south of the Bakery can be correlated with our findings. Like us, he found only 2 construction periods which he termed "early trench" and "late trench." Assuming continuity through the machine-dug units, Larrabee's early trench equates with our period 1 trench since it was the deepest.

Posts Two kingposts were identified from Larrabee's data by their fova distances from kingposts identified in our data. From the kingpost we observed in our unit 22 (Fig. 19), his kingposts were located at distances of 7 and 10 fovas north in his units 3 and 11 (Ibid.: Fig. 2). From both sets of data, we identified 7 kingposts of this period that were located at regular fova intervals.

No pickets of this period were identified in Larrabee's data by us or Larrabee (Ibid.:6).

Hypotheses

The distance of 1 1/2 fovas between the cornerpost at point H and the first kingpost north was unusual. An economical explanation is that kingposts were set at regular fovas from north to south, starting at point G, to meet line N-H. An alternative hypothesis is that some structural element yet to be identified occupied the odd interval.

Inferences

This period was the initial construction of Stockade G-H. Line G-H associated with line N-H by trench intersection and a shared cornerpost. Line G-H was built to intersect projected, pre-existing lines of northern and southern stockades. Construction of the Bakery was closely associated in time with period 1 of the east stockade.

East Stockade Period 2

Defined stratigraphically.

Data

Trench Located between points G and I, but directly observed only from 3.5 ft. north of point I to 18 ft. north of point H. Trench of this period was intrusive to that of period 1 and higher in elevation. It was also intrusive to the trench of the inner south stockade at point H. Depth ranged from 3 ft. below present surface in unit 2 to 3.4 ft. in unit 3 (Fig. 16). Fill consisted of mixed dark brown and buff soils.

Posts No kingposts were identified for this period.

Pickets and runners were identified by their inclusion within the trench of this period. Of the measurable picket diameters, 75% were within one sd of their mean (Table 5).

Other Line G-H was 25 fovas long (Fig. 4).

Previous Data

Following the reasons discussed in the previous period, Larrabee's "later trench" equates with our period 2 trench. No kingposts were confidently identified from previous data. However, 15 pickets were found with diameters very close to those we observed (Ibid.:4).

Hypotheses

Kingposts may not have been present in this period of the east stockade. The wooden runners were functionally the same as those of West Stockade Period 1.

Inferences

This period was the final construction of line G-I. Any subsequent repair must have been simple picket replacement done without trenching. Period 2 was a massive reconstruction and lengthening of the outer east stockade in order to intersect the outer south stockade. As will be discussed in South Stockade Period 3, intrusive wooden timbers were located west of point H. Whatever these timbers represented was no longer in use by the time of East Stockade Period 2.

South Stockade Period 1

Defined by stratigraphy and fova relationships of kingposts.

Data

Trench Located between points L and K as determined from regular fova intervals of kingposts, but stratigraphically noted only in units 8, 36-38 and 42 (Figs. 23, 28-29). Where observed, this was the deepest trench of line L-K. Depth varied from 4.5 ft. below present surface in unit 8 to 4.8 ft. in unit 37 (Figs. 23. 28). Fill consisted of either black silty clay and cobbles, or brown soil and cobbles. The first southern gate of the Fort Vancouver Stockade was identified in the trench of this period. Stratigraphic position of the east post of the gate in unit 42 was one of the means of defining the trench of this period (Fig. 29).

Posts Kingposts were identified by their regular fova intervals in relation to the posts of the south gate. Between point K and the east post of the gate, 3 kingpost impressions were found within a distance of 2 fovas. These were located in units 58, 60/61 (S250 x W200), and 63 (S240 x W190) (Figs. 31-32). Between point L and the west post of the gate in unit 40 (Fig. 28), 2 impressions were found for this period. One was stratigraphically identified in unit 37; the other in machine-dug unit 20 was identified by its relationship of 7 fovas to the first (Figs. 25, 28). Kingpost diameters could not be measured for this period. Locations were identified by highly modified holes in the trench floor. These holes were presumed to have been far larger than the original posts. The regular fova intervals between gate posts and kingposts of this period did not obtain in other areas of the south line east of point K or west of point L.

No pickets were identified for this period.

Gate Remains of the south gate were located 141.5 ft. west of point K and 164.5 ft. east of point L. The east post was stratigraphically identified; the west post was found at an interval of one fova. Gate remains consisted of a large circular post cast in unit 42 at 4.5 ft. below present surface, and an undefined cast with a rounded edge in unit 40 at 4.5 ft. East post cast was 1.0 by 1.1 ft. in diameter; west post cast was not completely measurable, but it appeared to have been no less than one ft. in diameter (Figs. 28-29). As measured on post centers, the south gate was exactly one fova wide. The gate center was offset about one fova east of the exact center of line L-K. This position corresponded to the space between 2 large warehouses immediately inside of the gate (not illustrated).

Hypotheses

Line L-K of this period associated with east line E-K in terms of identifiable fova intervals of the L-K kingposts and point K. Line L-K also associated with west line D-L. The westernmost kingpost of period 1 in line L-K was only 2 ft. short of being 5 fovas from point L, a 3% error. While cornerposts could not be identified at points L and K, the hypothetical association of lines can be further supported by symmetry. Previous measurements of lines L-K, E-K, D-E and D-L are reported as being 318 ft. long each (Caywood 1955:28). Our measurements show lines L-K and D-E to have been 320 ft. or slightly over 24 1/2 fovas long; lines D-L and E-K were 318.5 ft. or exactly 24 1/2 fovas long (Fig. 4). The error between the 2 sets amounts to 1%. Because of trench intersections and symmetry, line D-E was also associated in time with line L-K.

Cornerposts were used at points L and K, but probably removed by subsequent construction.

Inferences

Period 1 was the initial construction of the inner south stockade. As reflected by line L-K of this period, the total stockade of this time consisted of square D-L-K-E which was 24 1/2 fovas on a side. The first south gate of the stockade was built in this period; it was offset one fova east of the stockade centerpoint. Gate posts were one fova apart on centers, leaving an effective clearance of about 12 ft.

South Stockade Period 2

Defined by stratigraphy as well as fova relationships of trench intersections, gates and kingposts.

Data

Trench Located between points M and J, the trench was stratigraphically noted at points M, L, K, and both posts of the southwest (nee south) gate (Figs. 22-23, 34, 39). As seen in units 3-8, trench of this period continued west of point L and terminated at point M (Figs. 22-23). It also continued east of the southeast gate, but could not be stratigraphically identified at point J since most of this length was dug by machinery (Figs. 39-44). However, period 2 trench was absent in the hand-dug portions of line J-H (Figs. 44-46).

Trenches of periods 1 and 2 were found together only between points L and K. In line L-K, the trench of period 2 was higher in elevation and intrusive to that of period 1. As seen in units 71 (S220 x W160) through 98, the period 2 trench was intruded by that of period 3 between points K and J (Figs. 34-38). Depth in line M-K ranged from 3.1 ft. below present surface in unit 37 to 4.5 ft. in unit 4 (Figs. 22, 28). Depth in line K-J ranged from 2.7 ft. below present surface in unit 104 to 2.4 ft. in unit 77 (Figs. 35, 39). Fill generally consisted of loose or compacted black soils that were interlaid with bands or marblings of buff soil.

Gates Available stratigraphy in units 40-42 showed that the southwest gate of this period was the same structure as the south gate of period 1; there was no evident reconstruction (Figs. 28-29). Stratigraphy in units 101-103 showed that the southeast gate, a new structure, was built in the trench of this period (Fig. 39). Gate remains consisted of 2 massive framing posts 10.75 ft. apart set deeply into the trench. Remnant dimensions of the rectangular posts were 1.1 to 1.3 ft. by

0.80 to 0.85 ft. A framing sill 0.65 to 0.75 ft. wide and 0.15 to 0.35 ft. thick was tenoned into the inner faces of the posts. The trench plan and elevation were deliberately modified to accomodate the subsurface portion of the gate frame.

A simplified view of the gate remains suggests that the sill was originally the same width as the posts, and that it was set into a road that entered the gate (Fig. 54). An artist's reconstruction of the gate interior (Fig. 55) is based on the archeological evidence plus general historical evidence of HBC gates and stockades as pertinent to Fort Vancouver (Hussey 1972:13-33). The plank road of Fig. 55 is conjectural and based on the presence of a shallow, transverse trench between the gateposts (Fig. 39).

Posts Eleven kingpost impressions were identified for this period. Two were stratigraphically found in units 5 and 38/39 between point M and the southwest gate (Figs. 22, 28). Another in unit 22 (Fig. 25) was located 7 fovas from point M and 7 fovas from the kingpost in unit 38/39. Two kingposts were identified between point K and the southwest gate. One located in unit 60 (S250 x W200) was 7 fovas from the gate center; the other in unit 62 (S240 W200) was 8 fovas from the gate center (Fig. 32). Five kingpost locations were stratigraphically found between point K and the west post of the southeast gate. These were located at intervals of one fova each in units 72, 75, 77, 80 and 83 (Figs. 34-36). A possible kingpost of this period was found 3 fovas west of the west post of the southeast gate in unit 93 (Fig. 37). However, its diameter was quite small and the stratigraphy was unclear at this point.

Kingpost impressions located between the southeast gate and point J lacked stratigraphic context; neither did they relate to period 2 kingposts by regular fova intervals. As with period 1, the kingpost impressions of period 2 were large holes in the trench floor that were presumably much larger than the original pasts. Thus, diameters could not be reliably measured.

Other Distance between point M and the center of the southwest gate was 15 fovas. During this period the gate was still one fova wide. Distance between point J and the east post of the southeast gate was 12 fovas; however, the southeast gate was only 5/6 fova wide on post centers. From the west post of the southeast gate to the center of the southwest gate, the distance was 23 fovas. Distance between point M and the west post of the southeast gate was 38 fovas. Line M-J consisted of 50 fovas plus the width of the new southeast gate.

Hypotheses

Line M-J was an extension of line L-K that was designed to intersect lines C-M and F-J. Point M was planned by fova measurement from the center of the southwest gate which was the south gate of the preceding period. The west post of the southeast gate was planned by fova measurement from the center of the southwest gate. Point J was planned by fova measurement from the east post of the southeast gate. The southeast gate was centered in the eastern extension of the south stockade; i.e. line K-J. Thus, the larger part of the period 2 extension was laid out from west to east.

While cornerposts could not be confidently identified at points M and J, they probably existed during period 2 and were removed by subsequent construction.

Inferences

Period 2 was the second major construction of the inner south line. Since the above hypotheses regarding stockade planning can be supported by measurements, the total stockade at this time was the rectangular plan C-M-J-F. This plan included a north gate and 2 south gates. The western south (southwest) gate was the unchanged south gate of period 1. The eastern south (southeast) gate and the north gate were new constructions of period 2. Previous data indicates the presence of a single north gate through time at Fort Vancouver (Combes 1966:4-6). Our data show a variance of only 0.5 ft. in the distances between the east posts of the north and southeast gates, and line F-J (Fig. 4). Thus, the eastern posts of these new gates were planned to be set at the same distance from the east stockade of this period.

South Stockade Period 3

Defined by stratigraphy and the fova relationships of trench intersections and kingposts.

Data

Trench Located between points N and H, but observed only from point N to 21 ft. west of point H. Hiatus was due to presence of intrusive timbers (Figs. 45-46). Period 3 trench was intrusive to that of period 2 between points K and J, except at the southeast gate (Fig. 39). It was also intrusive to the period 2 trench between points M and K (Figs. 22-34). Period 3 was the initial trench in lines N-M and J-H, although only vestiges were found in the western end

(Figs. 22, 44-46). It was intrusive to trenches of periods 1 and 2 in line L-K (Figs. 23-33). Depth was highly veriable, and ranged from 2.1 ft. below present surface in unit 82 to 4.1 ft. in unit 142 (Figs. 35, 45). Fill consisted of dark brown to black soils that were often loose and mixed with gravels.

Gates No evidence was noted for reconstruction of gates during this period, although period 3 trench did approach the east post of the southwest gate (Fig. 29).

Posts Twenty-three kingposts were identified by stratigraphy and/or their fova relationships. Between point K and the southeast gate, 7 post butts or impressions were spaced one fova apart for a length of 6 fovas. These were located in units 83, 86, 88, 91, 93, 96 and 98 (Figs. 36-38). Another kingpost found in unit 8 occupied the same spot as a hypothesized cornerpost at point M during the previous period (Fig. 23). An impression in unit 43 was 1/4 fova east of the east post of the southwest gate (Fig. 29). All other kingpost locations of this period were identified by their regular fova intervals in relation to those stratigraphically found. Most of these 14 posts were found in machine-dug areas. Of the measurable kingposts, 67% were within one sd of their mean (Table 5).

Pickets were identified by their inclusion in the trench of this period. In units 4 through 85, period 3 pickets were generally higher in elevation than those of previous periods. Many were measurable and 73% were within one sd of their mean (Table 5).

Other South line N-H was 56 1/2 fovas long, whereas the parallel north line B-G was 56 1/3 fovas long. Difference was due to a 2-ft. offset of the NW Bastion at point B (Fig. 4). Western extension of the North Stockade, line B-C, measured one fova in length. Distances from the east post of the southeast gate to point H was 16 1/2 fovas; distance between the west post of the southwest gate and point N erred 1% of being 16 fovas.

Hypotheses

Line N-H was an extension of previous line M-J. Extensions N-M and J-H were determined by intersection with new west and east stockades A-N and G-H. Point N may have been planned as a one-fova extension to the west, plus the distance of the NW Bastion offset. Alternatively, points N and H may have been planned in relation to their closest gateposts.

Inferences

Line N-H associated with lines A-N and G-H by intersection. Since the NW Bastion and the Bakery were previously inferred to associate with lines A-N and G-H, they must also associate with line N-H. While we have little usable information on the north lines, it seems evident that the total stockade of this time consisted of rectangle A-N-H-G-B, plus the NW Bastion and Bakery.

The many identified kingposts of South Stockade Period 3, plus the new east and west stockades, indicate that this was a time of major construction. Both south gates of the period remained unchanged from the previous period; presumably, the north gate was also unchanged. While a major construction phase is indicated, historic evidence to be introduced suggests that individual lines or portions thereof were not exactly contemporary.

South Stockade Period 4

Defined by stratigraphy, the period consists of gate reconstruction and picket replacement.

Data

Trench Located only between points N and M, and at the southwest gate. It was intrusive to the trench of period 3 and largely replaced the latter in line N-M (Fig. 22). Depth ranged from 3.8 ft. below present surface in unit 2 to 4 ft. at the southwest gate (Figs. 22, 29). Fill consisted of brown to black soils that were presumably highly organic.

Gates There was no evident change in the southeast gate during this period. By contrast, the southwestern gate frame was reconstructed. A new east post was stratigraphically identified in unit 42, slightly above and west of the previous east post (Fig. 29). A new west post was located in unit 40, but stratigraphy was unclear at this point due to previous excavation (Fig. 28). The rectangular posts were set 10.7 ft. apart on centers, leaving an effective clearance of 9.15 ft. between interior faces. The east post measured 0.90 by 1.55 ft. and was set 4.4 ft. below present surface on a rectangular shim. The west post was 0.85 by 1.55 ft. and set 4.35 ft. deep immediately east of the previous west post. Unlike the southeast gate, no evidence of a framing sill was found for the new southwest gate (Figs. 28-29). A simplified view of the new gate (Fig. 53) details the use of trimmed pickets abutting the gate posts, as well as the runners and pickets of the previous period that were adjacent to the new gate frame.

Posts No kingposts were identified for this period.

Pickets were identified by the inclusion of their butts within the trench of this period. Their placement destroyed evidence of previous pickets as seen in west unit 63 through south unit 3 (Fig. 22). Only 47% of measurable diameters were within one sd of their mean (Table 5).

Hypotheses

This period may include the intrusive timbers previously noted west of point H, although stratigraphy was unclear due to previous excavation (Fig. 46). The timbers have been interpreted as partial foundations of the little known southeastern Bastion (Caywood 1955:8-9). The previous cornerpost at point N may have been replaced by another located 1/12 of a fova north. If so, the post position suggests that it would have been difficult to use walers at this corner (Fig. 22).

Inferences

This period correlates with West Stockade Period 2 of line A-N in terms of trench intersections and shared pickets at point N. It was the last construction period shared by the west and south lines at this point. The southwest gate of line N-H was reconstructed during this period. Its framing posts were set slightly inside those of the previous gate. The total stockade of this period continued to be A-N-H-G-B, plus the northwest Bastion and the Bakery. The southeast Bastion may be associated with this period.

South Stockade Period 5

Defined by stratigraphy and discrete space.

Data

Trench Located between points O and I, but observed only between S250 x W200 and S230 x W160, and at S50 x E175 (Figs. 47-49). Points O and I were observed during previous excavation (Caywood 1955: sheets 1 and 6 of map 2). Trench of this period was set about 1/2 fova south of the previous south lines (Fig. 4). It was a shallow, discrete trench that was not intrusive to other trenches. Depth ranged from 2.3 ft. below modern surface in unit S240 x W180 to 2.8 ft. in unit S230 x W160 (Figs. 47-48). Fill consisted of loose brown soils where observed.

Gates No gates were identified in our excavations. Previous investigations located a gate of this period immediately south of the previous southwest gates (Fig. 4; Caywood 1955:sheet 2 of map 2).

Framing posts of the new gate were reported to be circular, about 1.1 ft. in diameter, and set 10 ft. apart on centers (Caywood 1955:25). A new southeast gate must have existed also during this period, but it has never been seen archeologically.

Posts No kingposts were identified for this period, although suggestive dips in the trench floor were noted in units S250 x W200 and W190 (Fig. 47).

Pickets of this period were identified as the only pickets of line O-I. Of measurable diameters, 72% were within one sd of their mean (Table 5).

Hypotheses

By this period, line N-H was filled with old post butts, stone and other cultural rubble from continued construction and repair. In order to further repair the south stockade, it was more efficient to dig a new, shallow trench than it was to dig out the old south trench. The need for a new south stockade may have been occasioned by the strong winter winds at Fort Vancouver which blow from the south and southwest.

Inferences

Line O-I associated with lines A-O and G-I by intersection at points O and I. There were also close similarities in trench widths, depths and fills. Specifically, South Stockade Period 5 associated with West Stockade Period 3 and East Stockade Period 2. Therefore, the total stockade of this time consisted of rectangle A-O-I-G-B, plus the northwest Bastion and the Bakery.

This period was a discrete construction from all other south stockade periods. A new southwest gate, the third built, was located about 1/2 fova south of the previous southwest gates and in approximately the same alignment. A new southeast gate, the second built, must have existed in line O-I. Since the second southeast gate has never been observed archeologically, its spatial relationship to the first remains hypothetical.

South Stockade Period 6

Defined stratigraphically.

Data

Located only at the southwest gate of line N-H, this was a period

of destruction rather than construction. The period was identified by buff soils and gravels that were intrusive to casts of the southwest gate east post and an abutting picket cast of South Stockade Period 4 (Fig. 29). No other posts were associated with this period.

Hypotheses

The southwest gate of line N-H was removed during or before this period, resulting in the partial backfilling of post casts with soils of period 6. Also during this period, the trench of the former gate location was filled with rock (Fig. 29; Caywood 1955:25), possibly for use as a sump.

Inferences

Since the southwest gate of line N-H was standing during South Stockade Period 4 but removed by South Stockade Period 6, the removal correlates with construction events of South Stockade Period 5. Since line N-H was replaced by line O-I, the southeast gate of line N-H was most likely removed during the same period.

Inner West Stockade (F501)

Defined by stratigraphy and discrete space.

Data

Trench Located between points D and L, but observed only at point L and 7 ft. north (Fig. 50). This was a single, discrete trench filled with loose brown soil and cobbles. Its maximum depth was 3.2 ft. below present surface. Southern end of the trench was cut by the trench of South Stockade Period 2 (Fig. 23).

Posts No kingposts were observed in this trench.

Pickets consisted of a single line whose butts rested in the trench bottom. Diameters ranged widely for the small number (Table 5). West sides of the pickets were braced and aligned by 5 large stones set at various elevations (Fig. 50).

Hypotheses

A cornerpost probably existed at point L during this period, but was removed by subsequent construction.

Inferences

Feature 501 represented stockade line D-L which was 24 1/2 fovas long. As discussed under South Stockade Period 1, line D-L was part of the square stockade D-L-K-E. Thus, the rock bracing of the pickets was at the exterior of the line, and was probably designed to strengthen the corner.

Middle West Stockade (F500)

Defined by stratigraphy and discrete space.

Data

Trench Located between points C and M, but observed only at point M and 6 ft. north (Fig. 50). This was a single, discrete trench filled with loose brown soils that contained bands of black soil along its eastern side. Maximum depth below present surface was 3.4 ft. Southern end of the trench was cut at point M by the trench of South Stockade Period 3 (Fig. 22).

Posts No kingposts were identified in the short exposure. A single line of pickets was found, as well as a portion of a runner at the northern end of the line (Fig. 50). Diameters of the few pickets were quite restricted (Table 5).

Hypothesis

Feature 500 represented line C-M which was 24 1/2 fovas long.

Inferences

Since the single trench line C-M was cut by the trench of South Stockade Period 3, it must have associated with an earlier south line. As discussed in South Stockade Period 2, Feature 500 was part of rectangular stockade C-M-J-F.

Middle East Stockade (F123 and F502)

Defined by stratigraphy and discrete space.

Data

Trench Located between points F and J, but observed only at the extremities. The northern exposure, Feature 123, was a single, discrete trench that has been previously described (Hoffman and Ross 1972:15-17).

The southern exposure, Feature 502, extended from point J to 6 ft. north (Fig. 50). It was also a single, discrete trench. Black soils filled the east side of the trench, while banded black and buff soils filled the west side. The southern end at point J was cut by the trench of South Stockade Period 3 (Fig. 44). Depths varied from 3.4 ft. below present surface in the southern portion to 4.4 ft. in the north.

Posts No kingposts were confidently identified other than the corner-post impression at point J (Fig. 50). This kingpost was previously identified as part of South Stockade Period 2; its position was reused for a picket of a subsequent period (Fig. 44).

Only a single line of pickets was found in the northern and southern exposures. The sample was small and diameters were quite restricted (Table 5).

Other Possible runners were noted on the east side of the pickets in the northern exposure near point F (Hoffman and Ross 1972:Fig. 4).

Hypothesis

Features 123 and 502 were exposures of the single line F-J.

Inferences

Since the southern end of line F-J was cut by the trench of South Stockade Period 3, the line must have associated with an earlier southern period. As discussed under South Stockade Period 2, these exposures were part of rectangular stockade C-M-J-F. If true runners, the wooden pieces found in F123 were located at the exterior of the picket line.

Inner East Stockade (F320)

Defined by stratigraphy and discrete space.

Data

Trench Located between points E and K, but observed only from point K to 34.5 ft. north, plus at a detached exposure 11 ft. long (Figs. 51-52). This was a single, discrete trench whose maximum depth below present surface varied from 2.8 to 4.3 ft. It was filled with loose brown soils; portions of the trench were packed with rock. Previous excavations at and adjacent to point K destroyed much of the stratigraphic evidence. The southern end of the trench at point K appeared

to have been cut by the trenches of South Stockade Periods 2 and 3, although the situation was unclear (Figs. 33-34).

Posts Two kingpost impressions were found at distances of one and 2 fovas north of point K. Each represented a post 0.95 ft. in diameter that was well set below the trench floor (Fig. 51).

Where found intact, butts of pickets and picket casts rested directly on the trench floor. Only 64% of the picket diameters were within one sd of their mean (Table 5).

Hypotheses

Feature 320 represented line E-K. Since this line was previously hypothesized to associate with line L-K of South Stockade Period 1, it was likely that the southern end of E-K was cut by the trenches of South Stockade Periods 2 and 3. The kingposts of line E-K appeared to have been pulled, possibly to be reused elsewhere.

Inferences

As discussed under South Stockade Period 1, line E-K was 24 1/2 fovas long. It was the east wall of the square stockade D-L-K-E.

Table 5 - Stockade post diameters (ft.) from hand dug areas only.

	N	Range	Mean	sd
West Stockade Period 1 kingposts	16	0.60 - 1.45	0.98	0.264
West Stockade Period 1 pickets	140	0.20 - 1.45	0.66	0.187
West Stockade Period 2 pickets	297	0.30 - 1.10	0.65	0.128
West Stockade Period 3 pickets	28	0.20 - 1.10	0.70	0.260
East Stockade Period 1 kingposts	5	0.90 - 1.15	1.01	0.080
East Stockade Period 2 pickets	28	0.30 - 0.80	0.51	0.125
South Stockade Period 2 pickets	7	0.55 - 1.00	0.80	0.153
South Stockade Period 3 kingposts	21	0.55 - 1.15	0.89	0.164
South Stockade Period 3 pickets	170	0.20 - 1.15	0.59	0.150
South Stockade Period 4 pickets	17	0.50 - 0.80	0.61	0.076
South Stockade Period 5 pickets	68	0.30 - 0.95	0.57	0.132
Feature 501 Pickets	7	0.40 - 0.80	0.63	0.334
Feature 320 Pickets	14	0.20 - 0.80	0.42	0.210
Feature 500 Pickets	5	0.55 - 0.90	0.67	0.125
Features 502 and 123 pickets	26	0.30 - 0.90	0.59	0.147

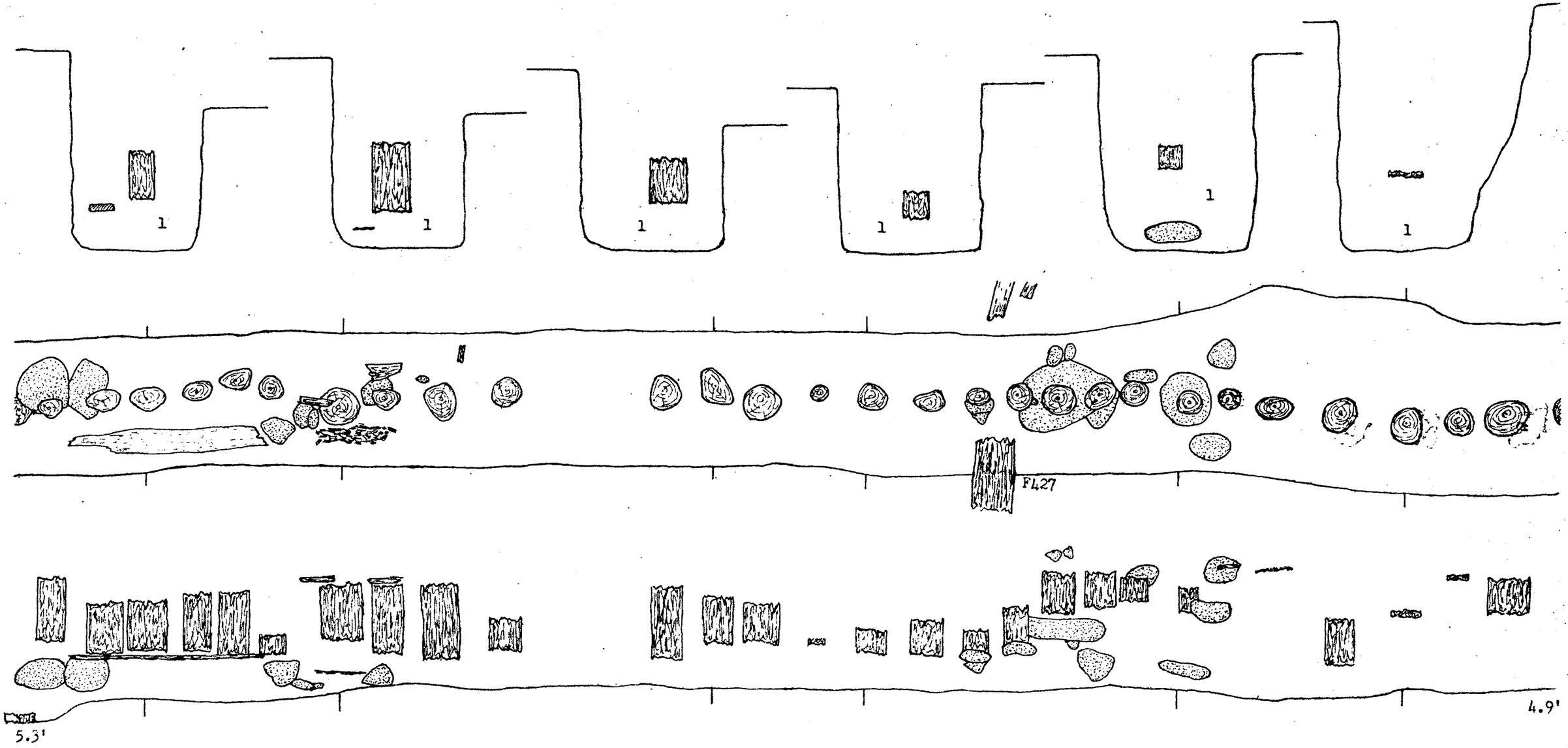

1
1
1
1
1
1
F427
5.3'
4.9'
WEST STOCKADE
N
0 1 2 3 4 5
feet
unit 1
unit 2
unit 3
unit 4
unit 5
unit 6

Fig. 5

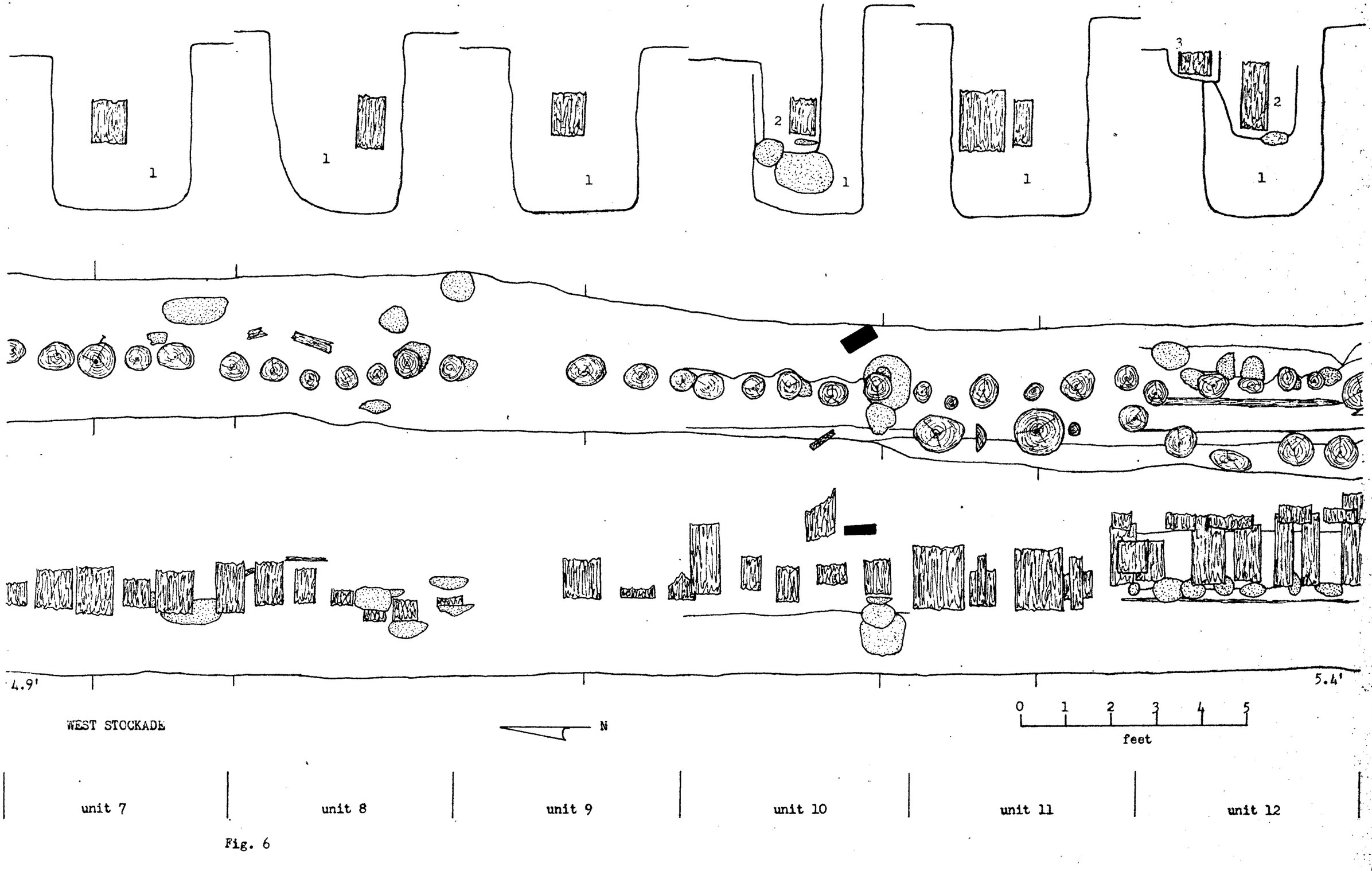

1
1
1
2
1
1
3
2
1
4.9'
5.4'
WEST STOCKADE
N
0 1 2 3 4 5
feet
unit 7
unit 8
unit 9
unit 10
unit 11
unit 12

Fig. 6

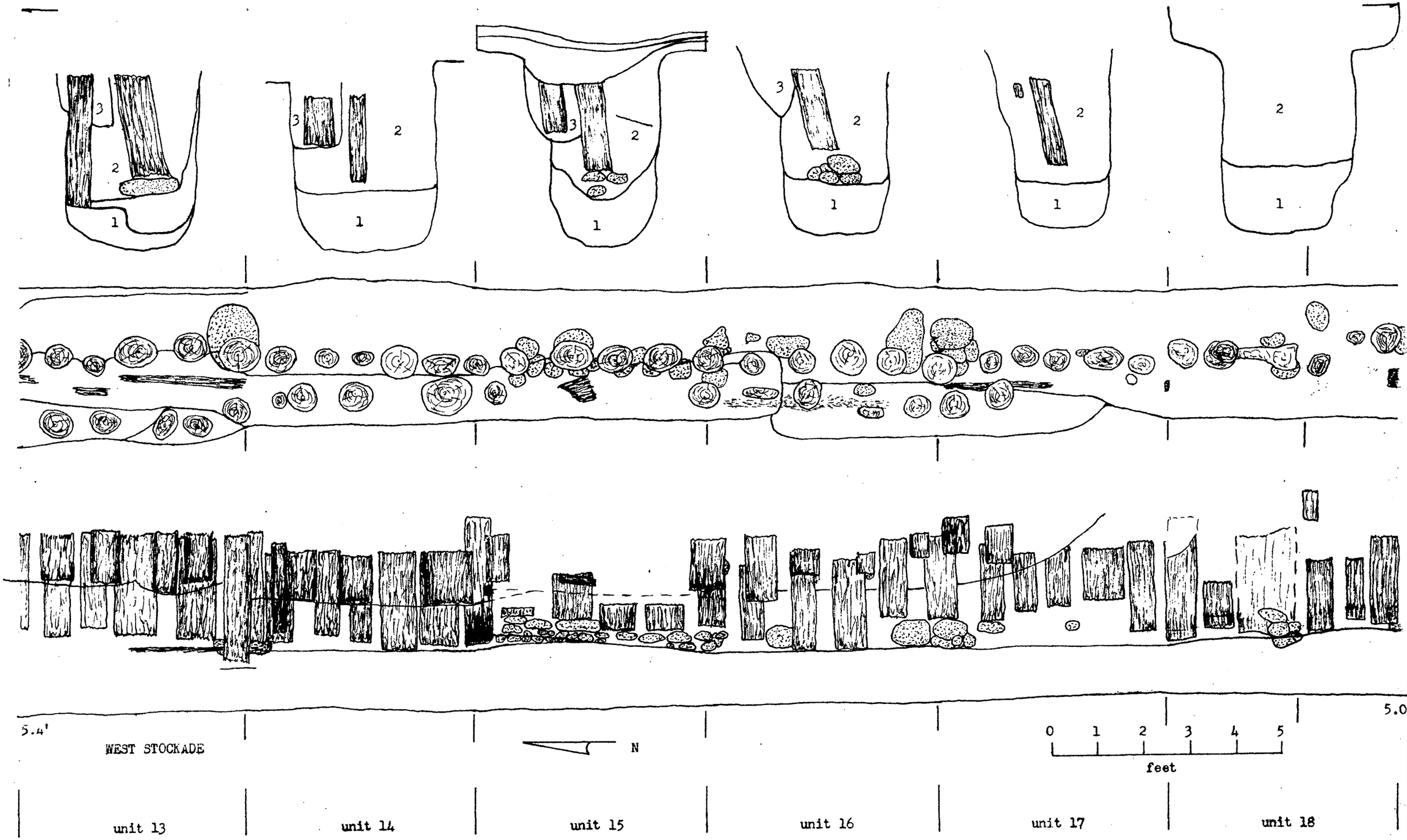

3
2
1
5.4'
WEST STOCKADE
N
0 1 2 3 4 5
feet
5.0
unit 13
unit 14
unit 15
unit 16
unit 17
unit 18

Fig. 7

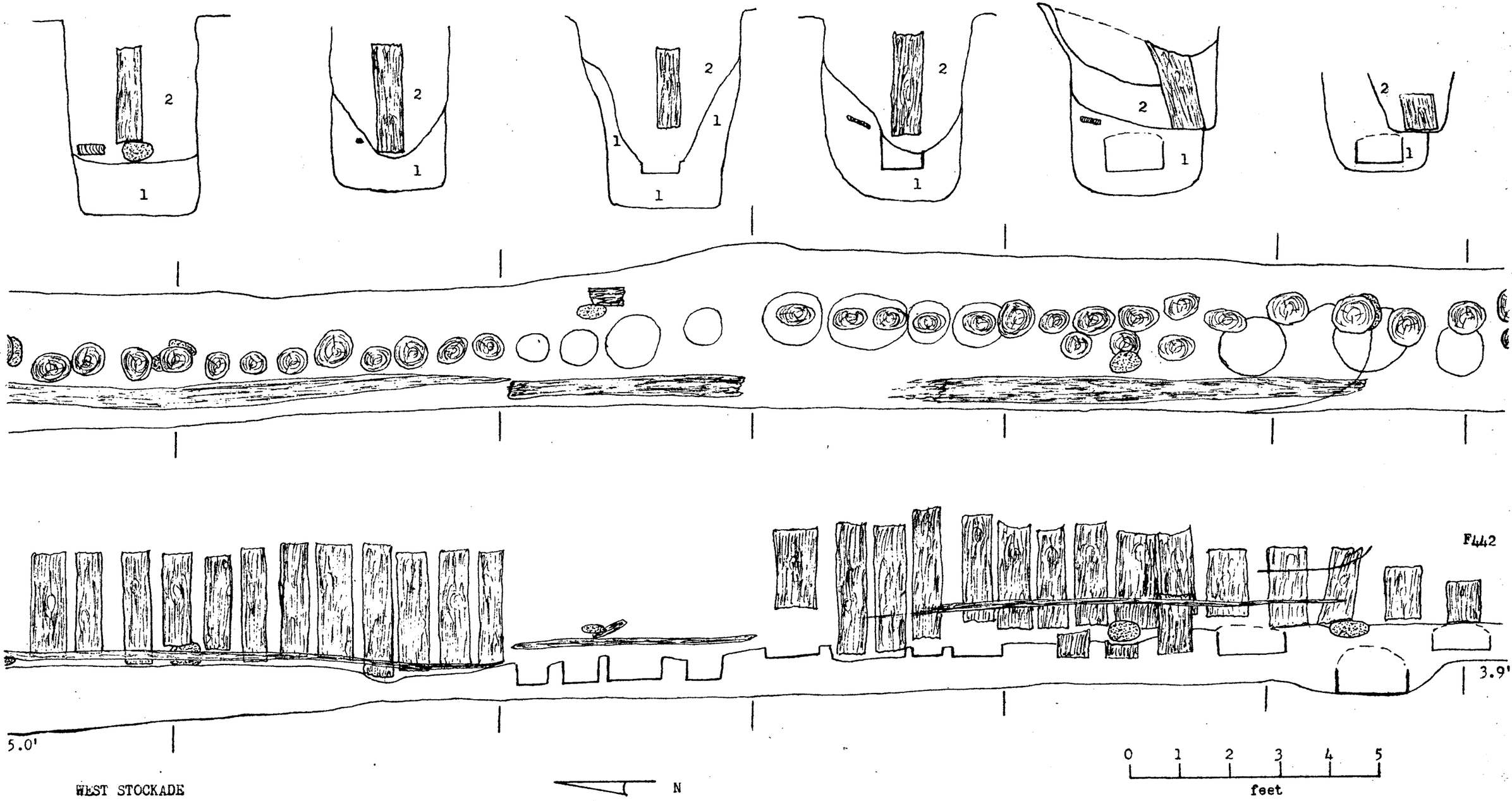

F442
5.0'
3.9'
WEST STOCKADE
N
0 1 2 3 4 5
feet
unit 19
unit 20
unit 21
unit 22
unit 23
unit 24

Fig. 8

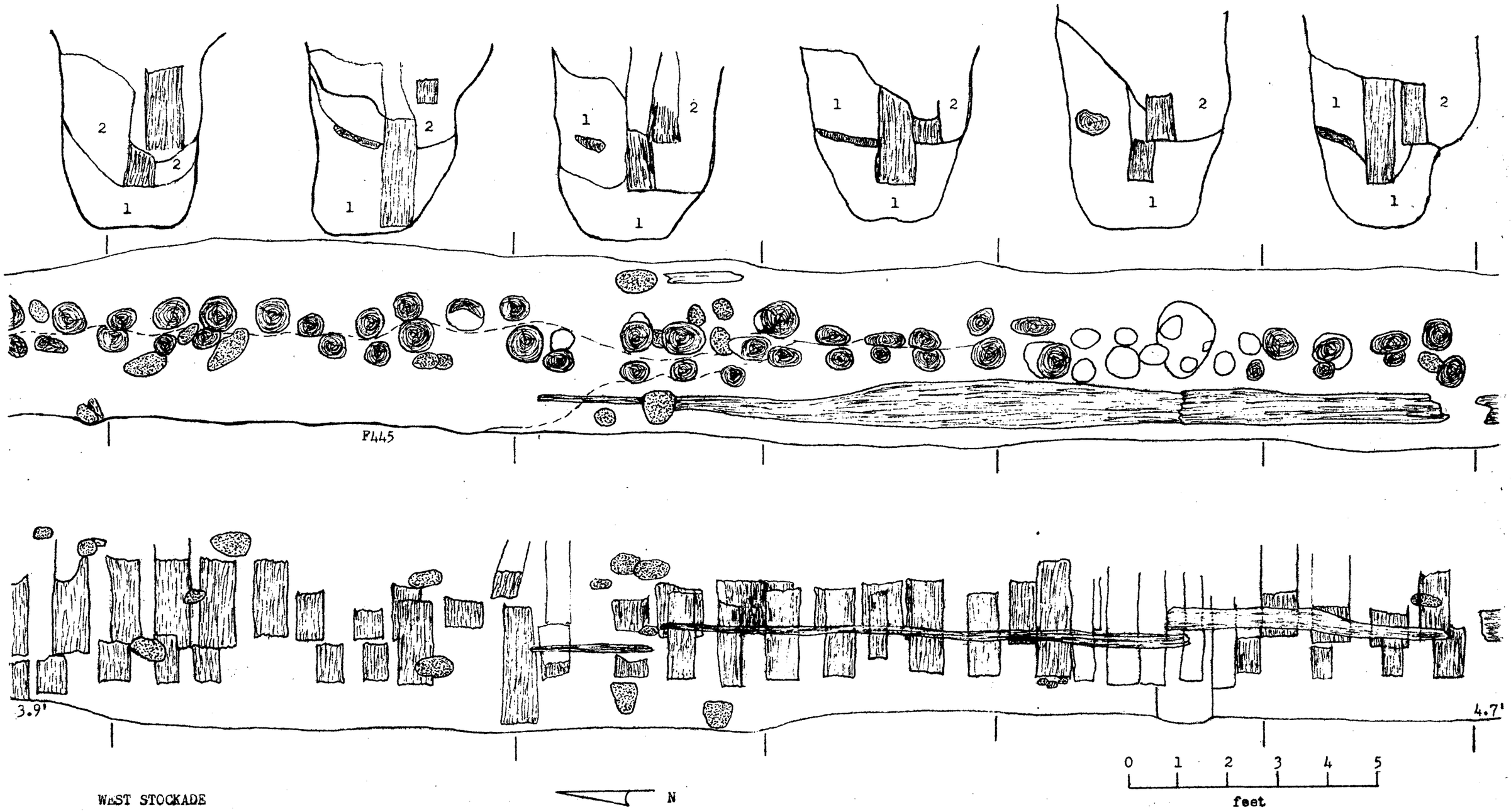

2
2
1
1
2
1
2
1
2
1
2
1
2
1
F445
3.9'
4.7'
WEST STOCKADE
N
0 1 2 3 4 5
feet
unit 25
unit 26
unit 27
unit 28
unit 29
unit 30

Fig. 9

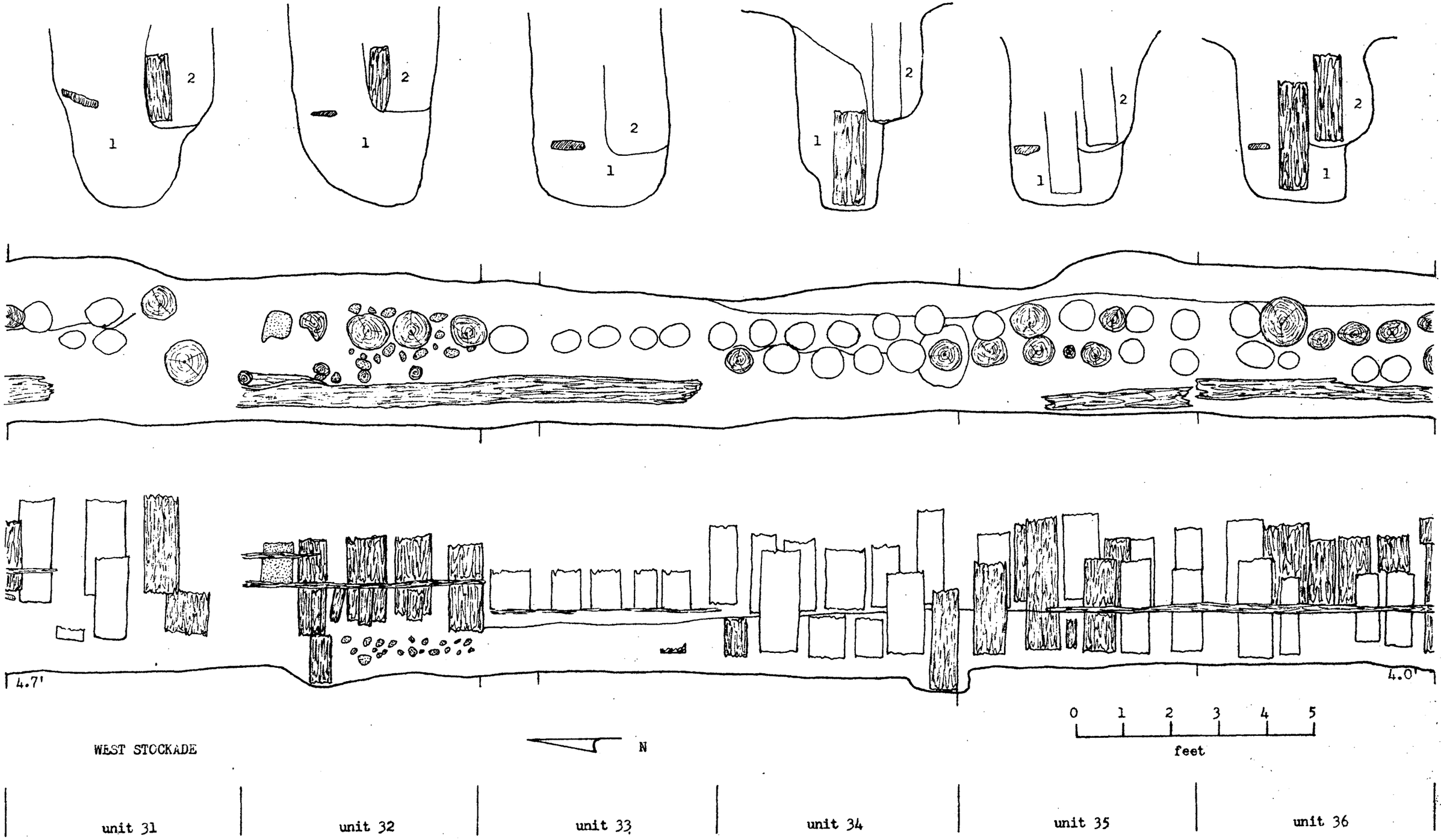

1
2
4.7'
4.0'
WEST STOCKADE
N
0 1 2 3 4 5
feet
unit 31
unit 32
unit 33
unit 34
unit 35
unit 36

Fig. 10

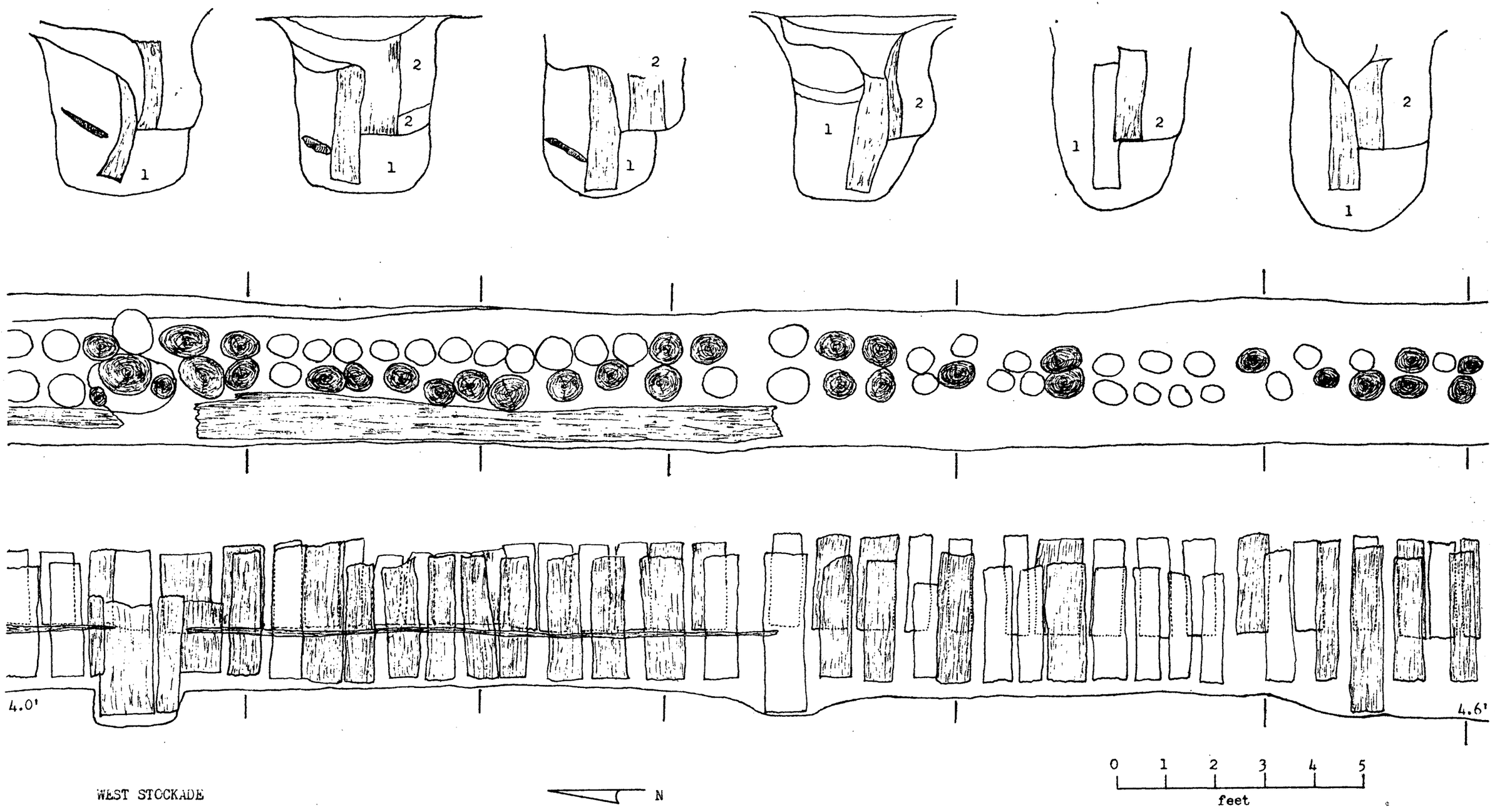

1
2
1
2
1
2
1
2
1
2
1
2
4.0'
4.6'
0 1 2 3 4 5
feet
WEST STOCKADE
N
unit 37
unit 38
unit 39
unit 40
unit 41
unit 42

Fig. 11

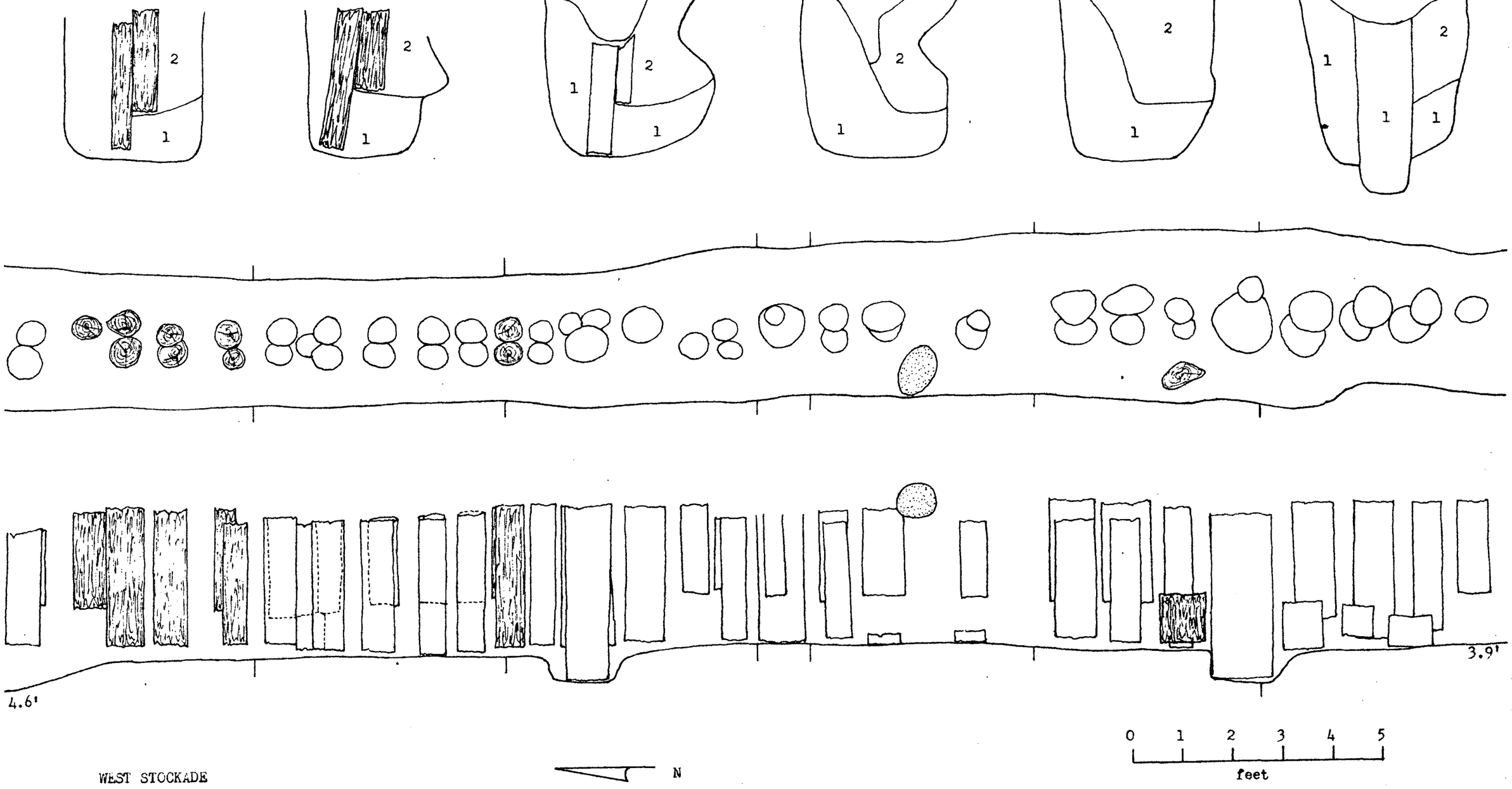

2
1
2
1
1
2
1
2
1
2
1
2
1
1
1
4.6'
3.9'
WEST STOCKADE
N
0 1 2 3 4 5
feet
unit 43
unit 44
unit 45
unit 46
unit 47
unit 48

Fig. 12

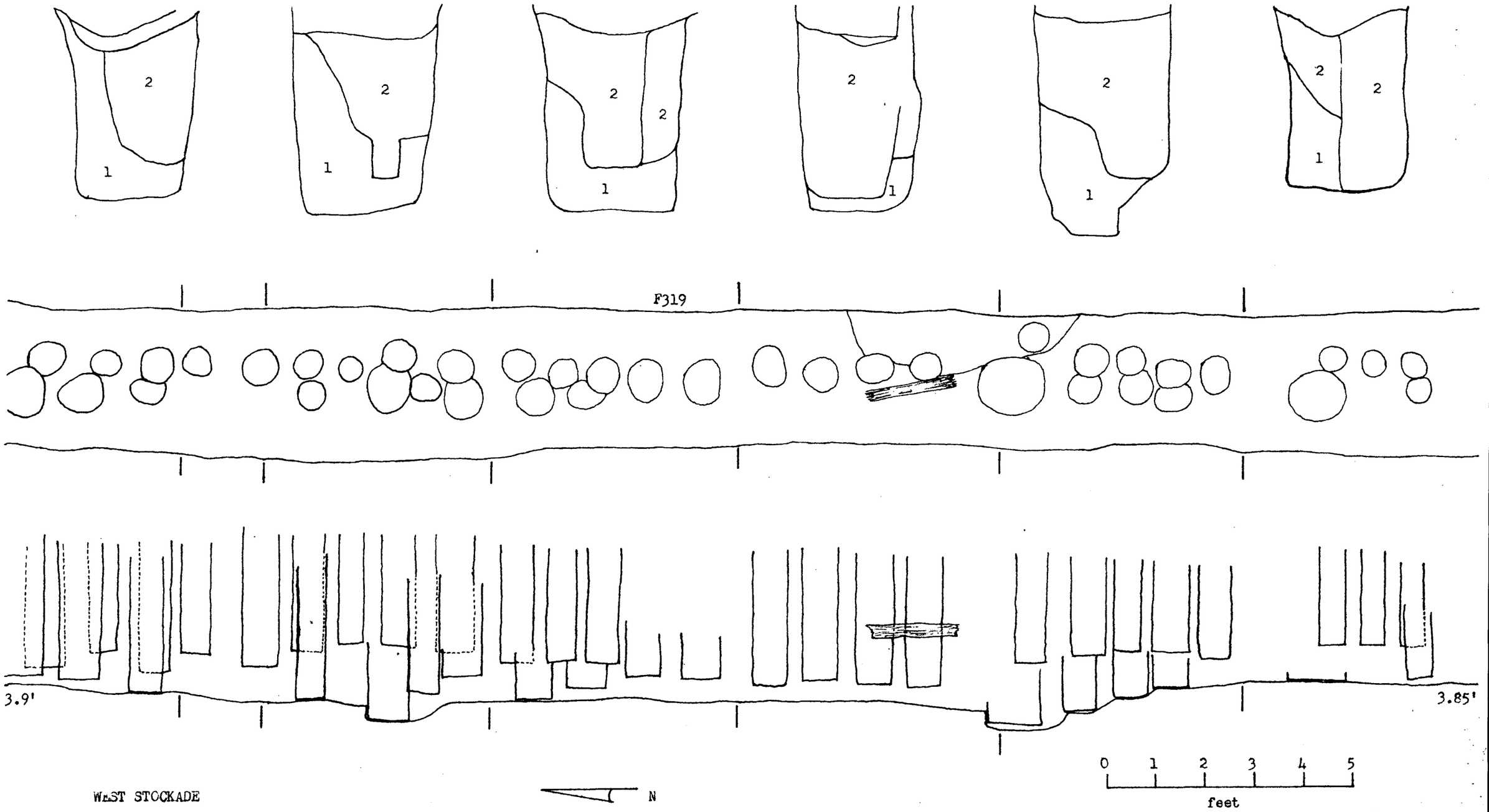

2
1
2
1
2
2
1
2
1
2
2
1
2
2
1
F319
3.9'
3.85'
0 1 2 3 4 5
feet
WEST STOCKADE
N
unit 49
unit 50
unit 51
unit 52
unit 53
unit 54

Fig. 13

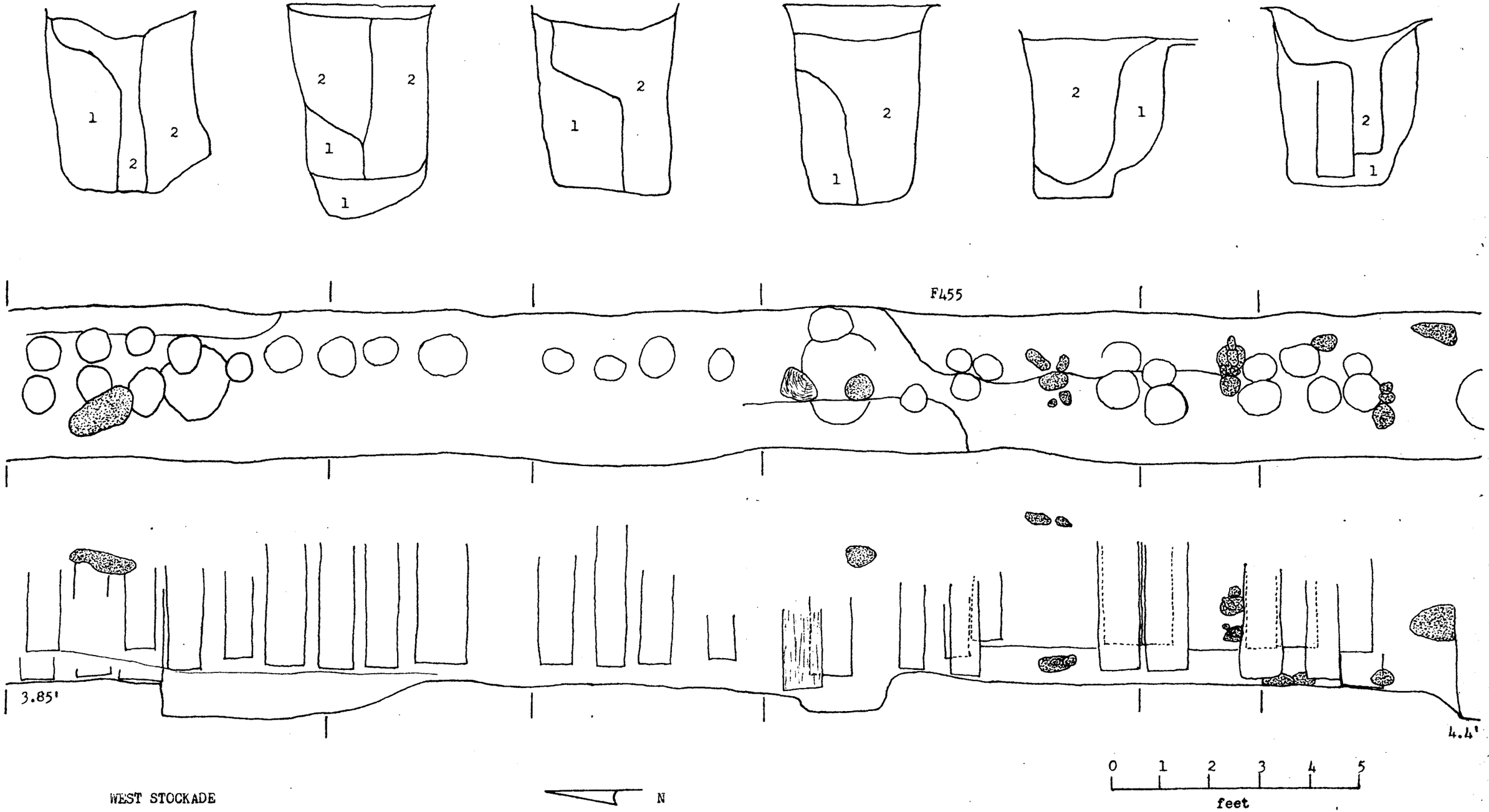

F455
3.85'
4.4'
WEST STOCKADE
N
0 1 2 3 4 5
feet
unit 55
unit 56
unit 57
unit 58
unit 59
unit 60

Fig. 14

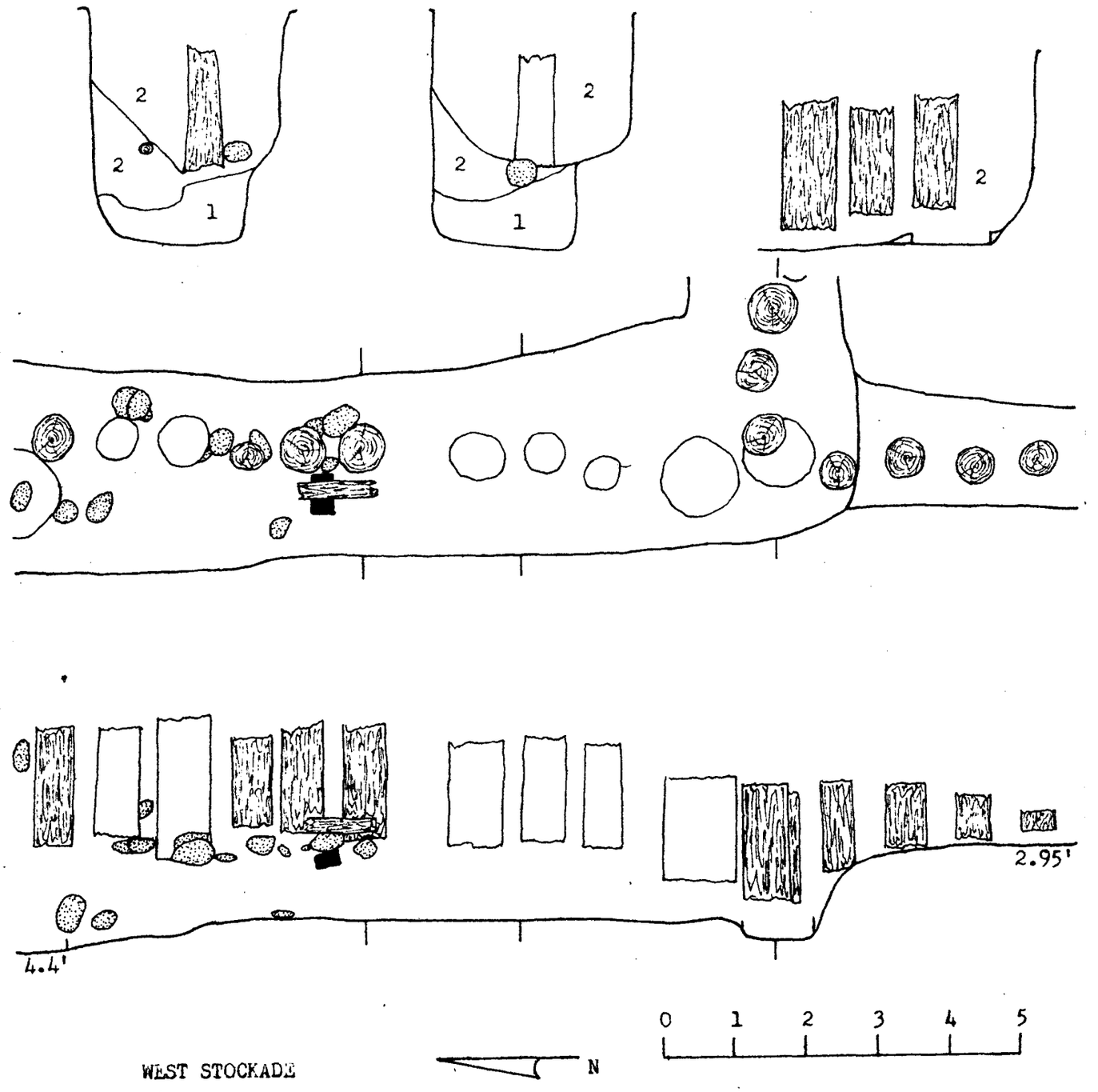


Fig. 15

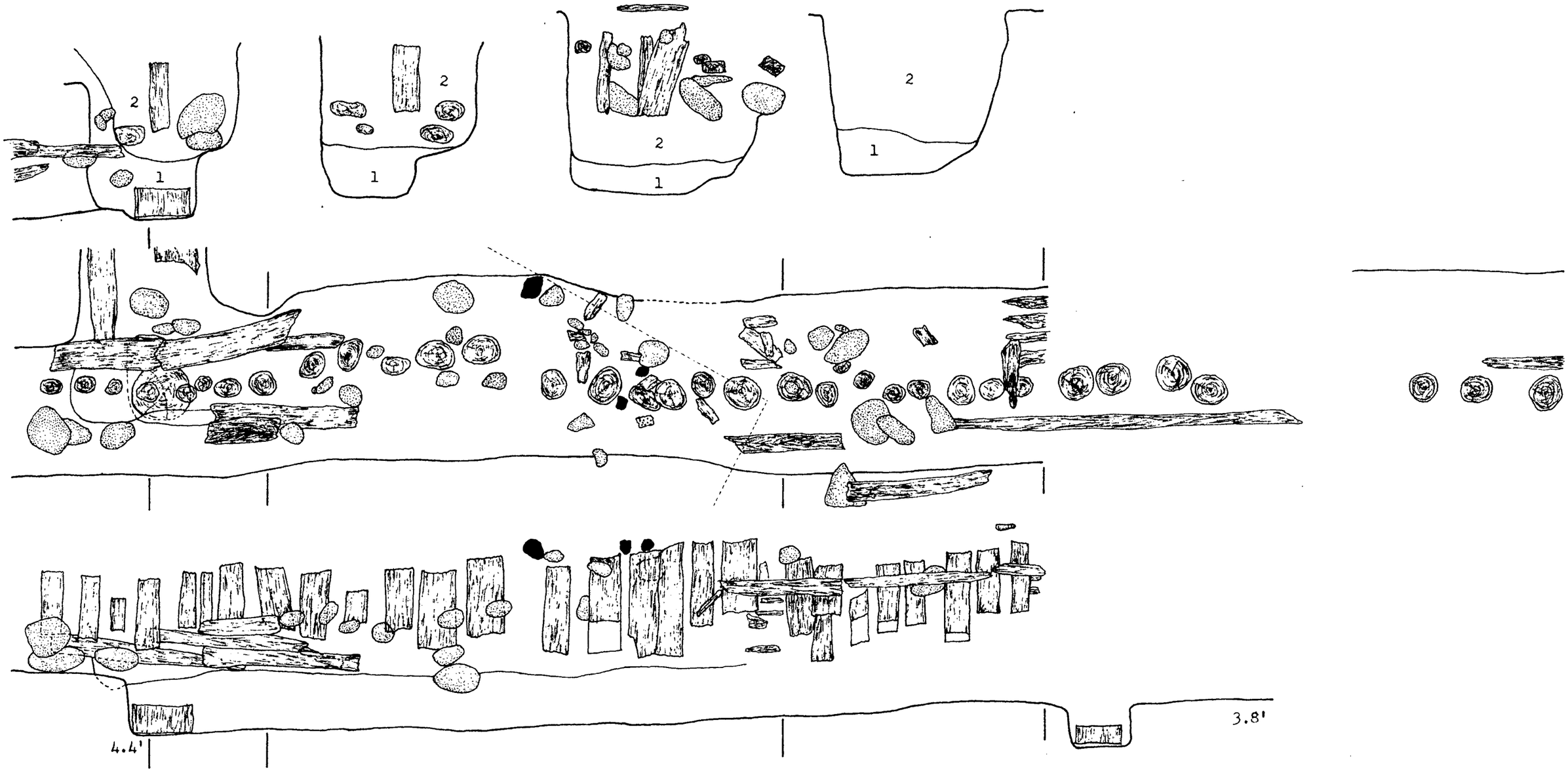

2
1
2
1
2
1
2
1
4.4'
3.8'
0 1 2 3 4 5
feet
N
SOUTH STOCKADE
EAST STOCKADE
S35.0 X E180.0
unit 145
unit 1
unit 2
unit 3
unit 4
unit 5

Fig. 16

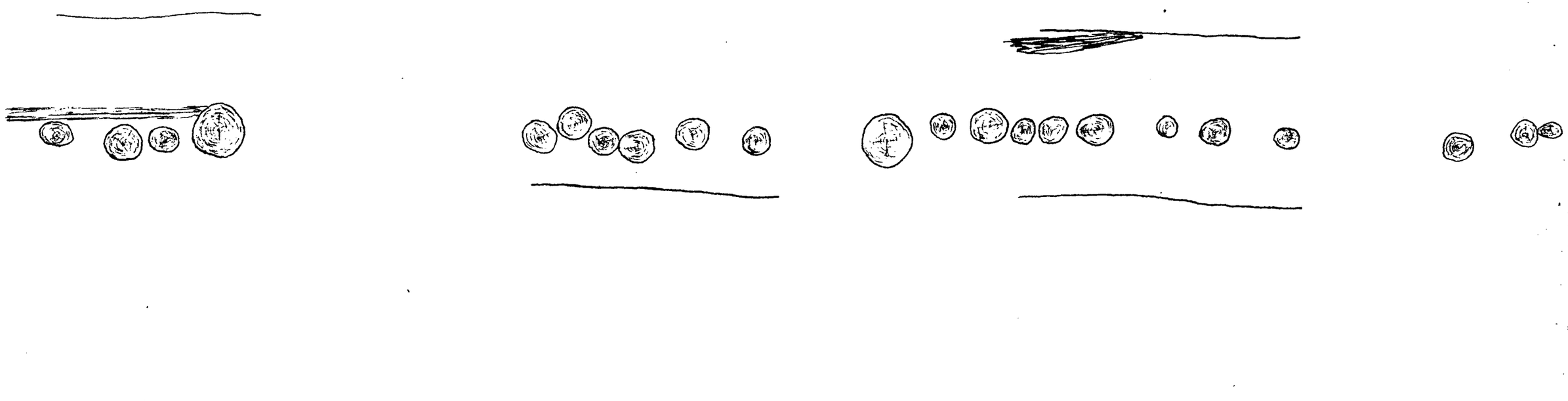

4.2'
4.3'
N
0 1 2 3 4 5
feet
EAST STOCKADE
unit 6
unit 7
unit 8
unit 9
unit 10
unit 11

Fig. 17

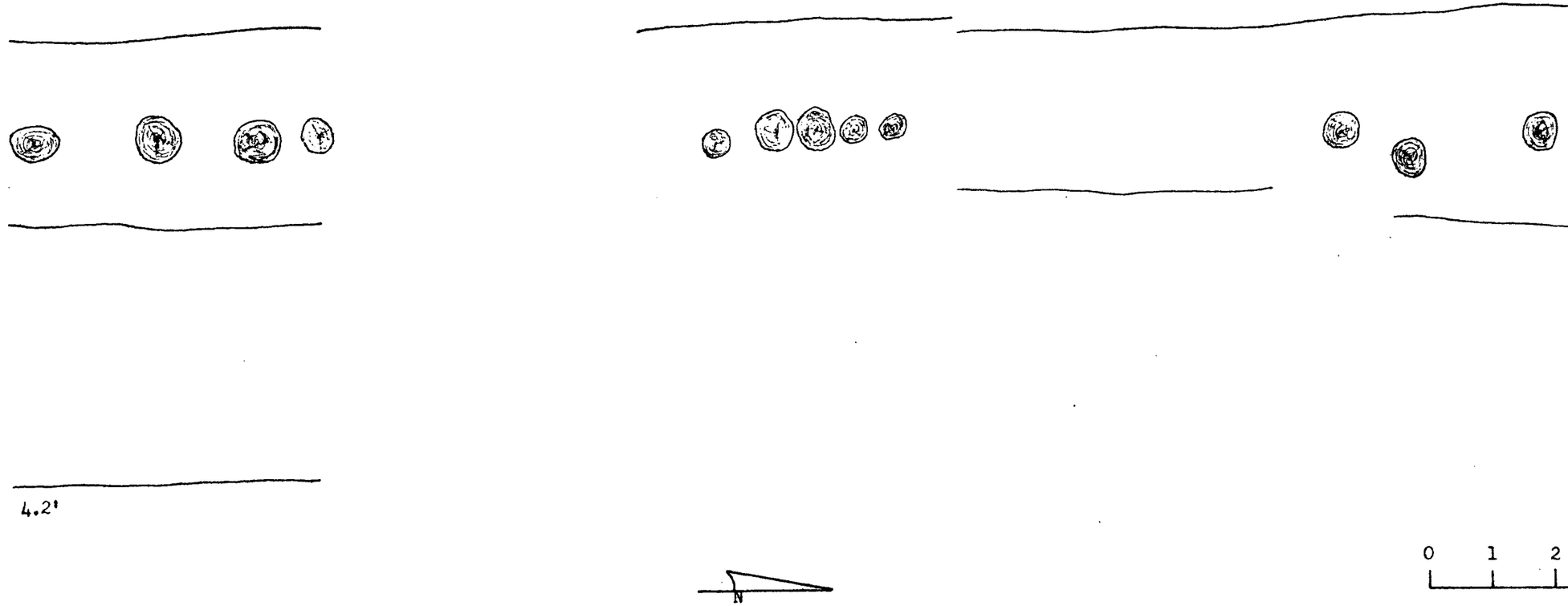

4.2'
N
0 1 2 3 4 5
EAST STOCKADE
unit 12
unit 13
unit 14
unit 15
unit 16
unit 17

Fig. 18

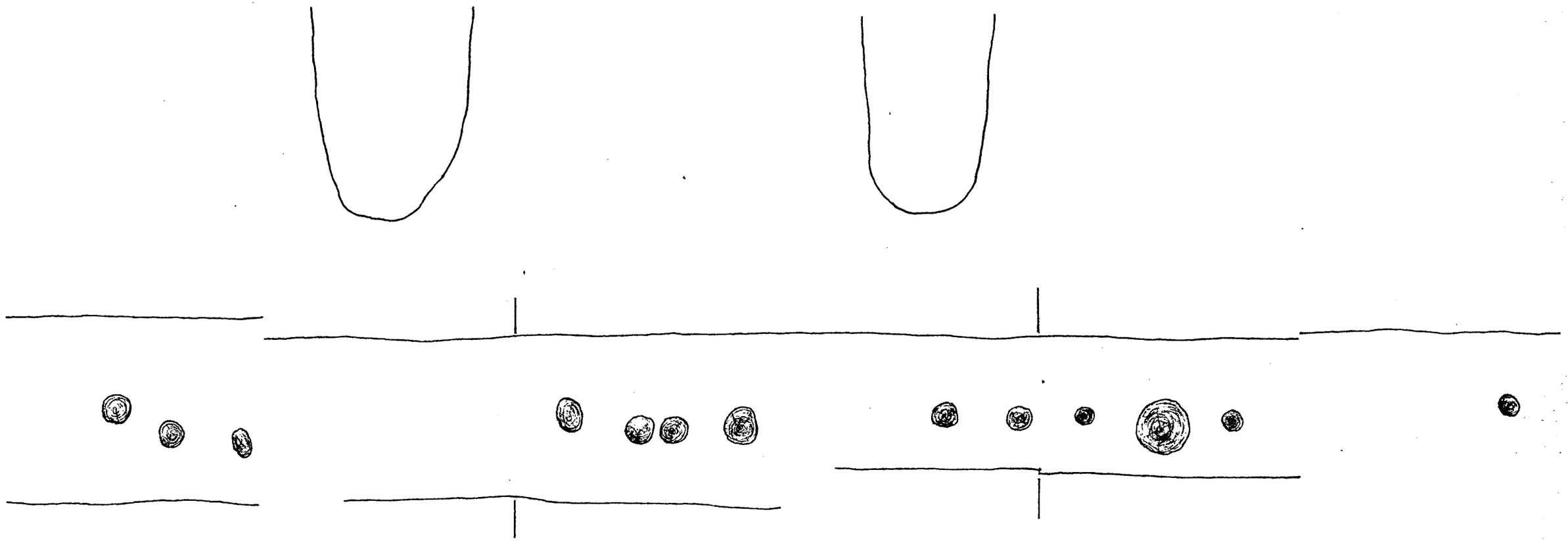

4.5'
0 1 2 3 4 5
N
EAST STOCKADE
unit 18
unit 19
unit 20
unit 21
unit 22
unit 23

Fig. 19

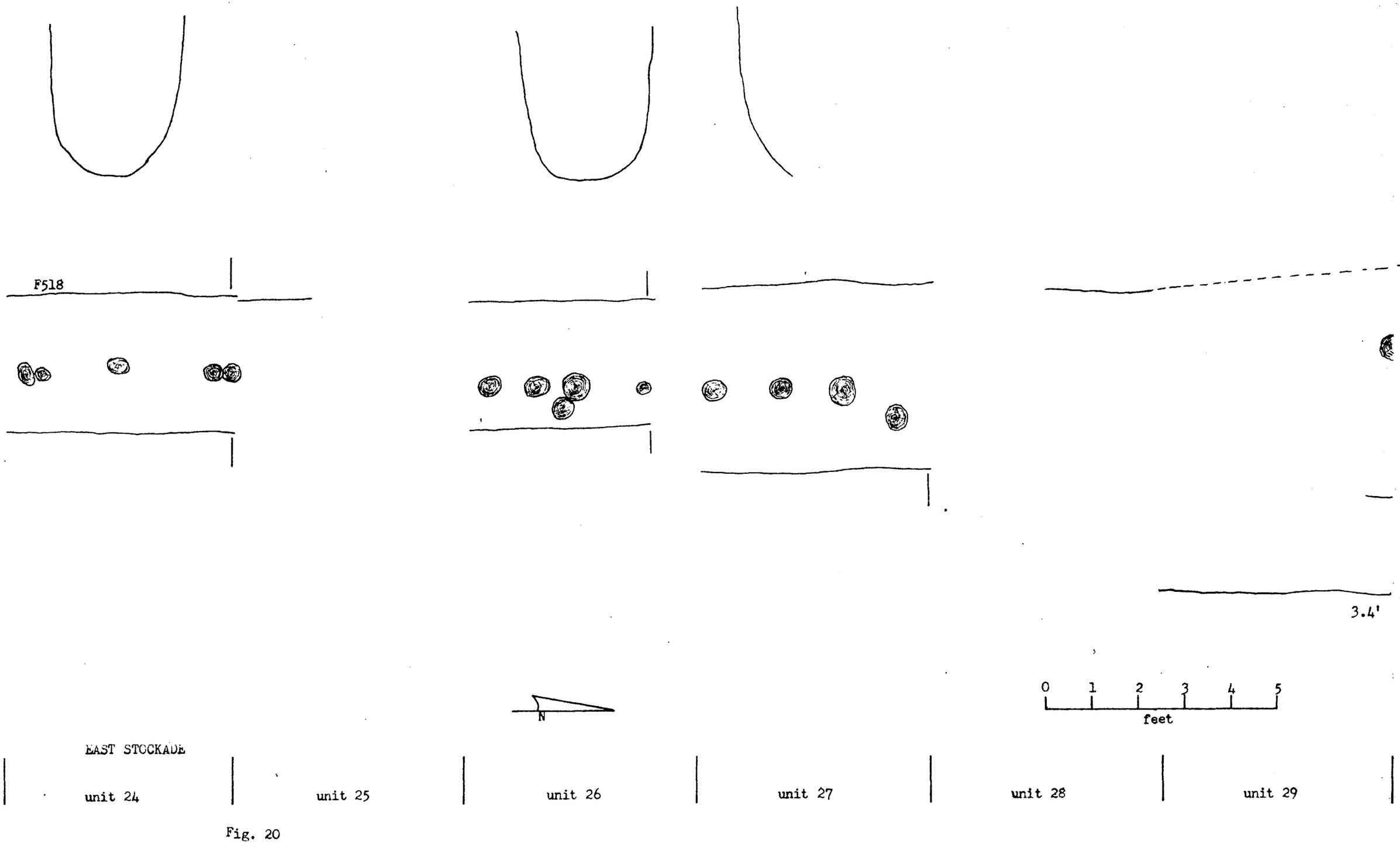

F518
3.4'
N
0 1 2 3 4 5
feet
EAST STOCKADE
unit 24
unit 25
unit 26
unit 27
unit 28
unit 29

Fig. 20

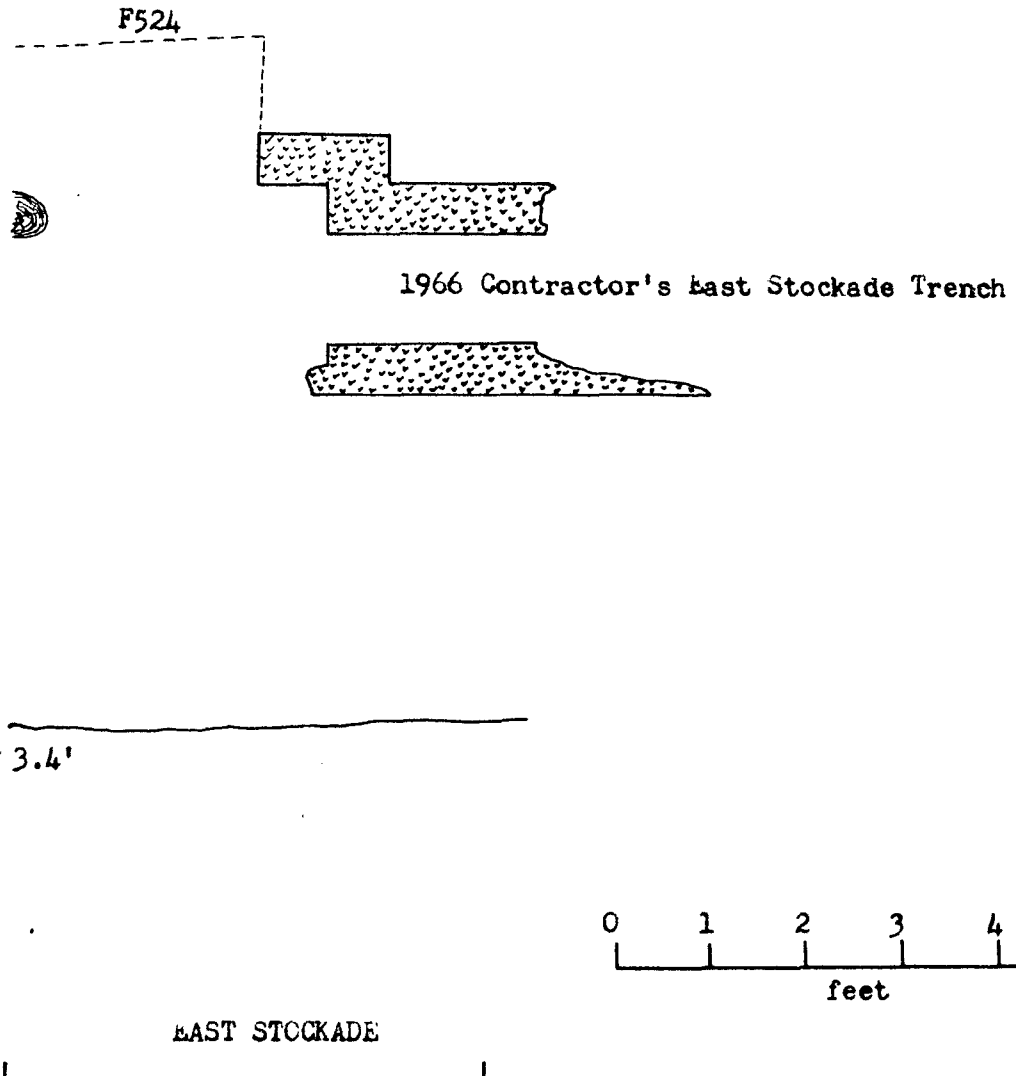

F524
1966 Contractor's East Stockade Trench
3.4'
0 1 2 3 4 5
feet
EAST STOCKADE
unit 30
N

Fig. 21

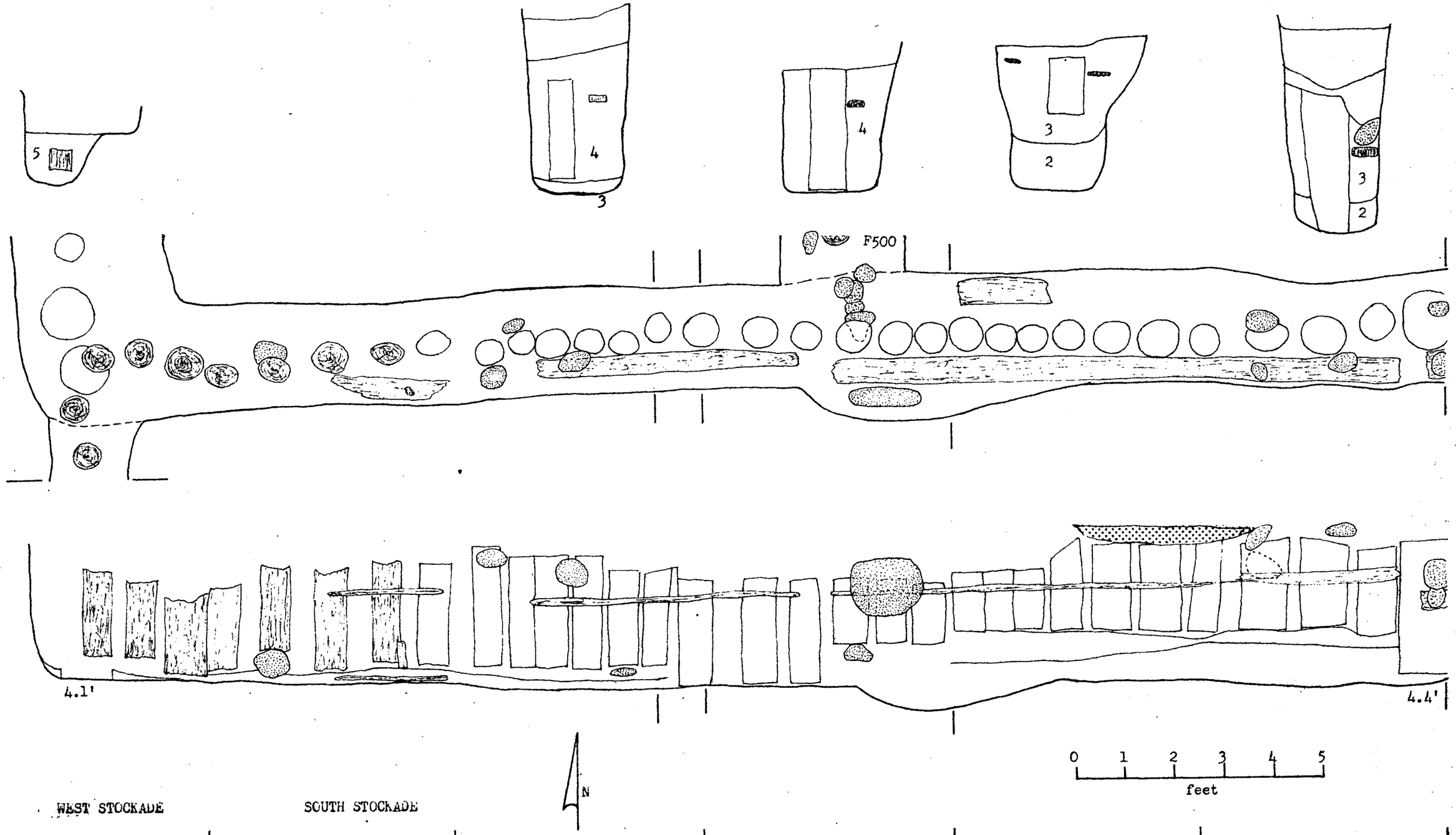

5
4
3
4
3
2
3
2
F500
4.1'
4.4'
0 1 2 3 4 5
feet
N
WEST STOCKADE
SOUTH STOCKADE
unit 63
unit 1
unit 2
unit 3
unit 4
unit 5

Fig. 22

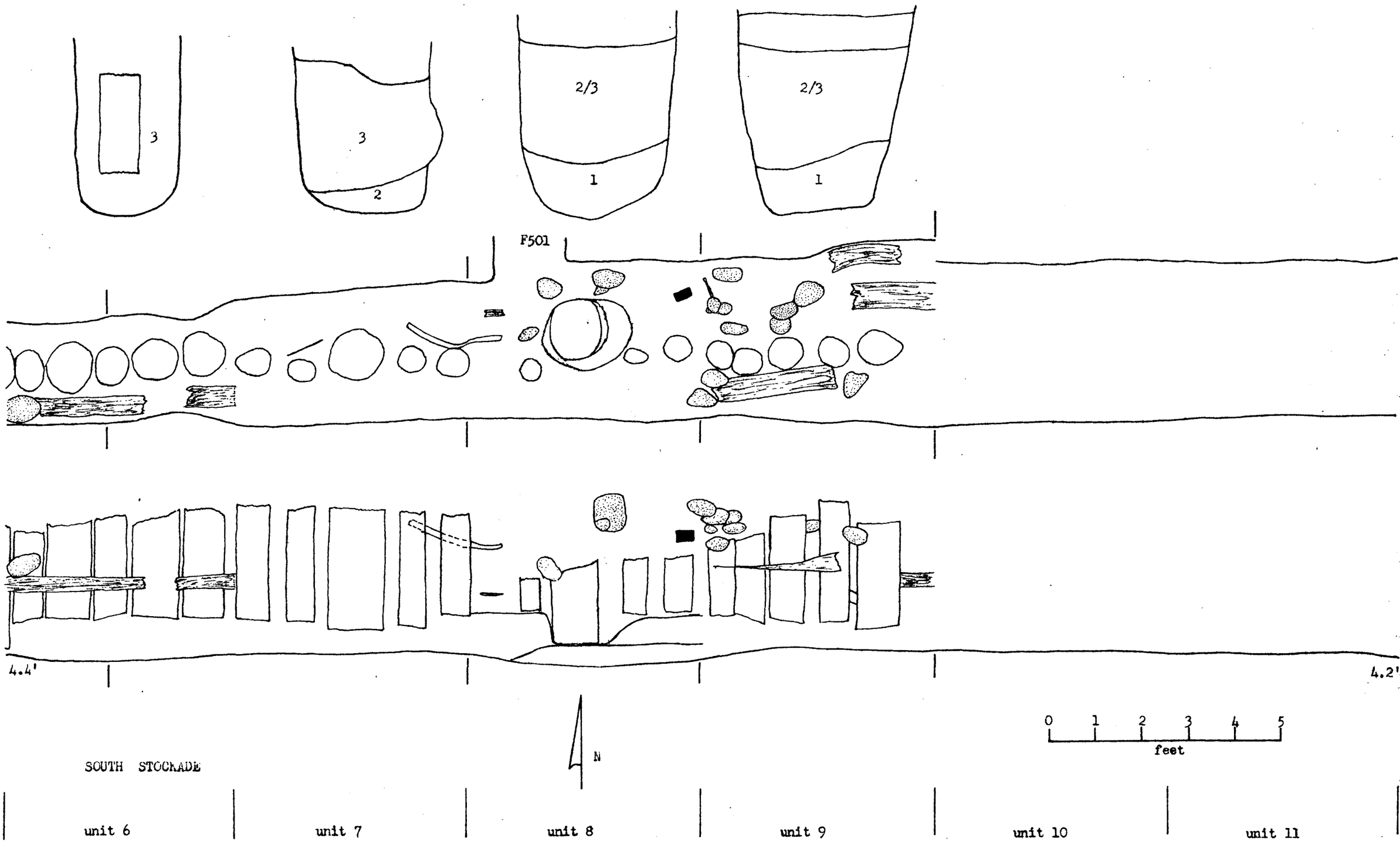

3
3
2
2/3
1
2/3
1
F501
4.4'
4.2'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 6
unit 7
unit 8
unit 9
unit 10
unit 11

Fig. 23

3.7'

4.2'

N

0 1 2 3 4 5
feet

SOUTH STOCKADE

unit 12 | unit 13 | unit 14 | unit 15 | unit 16 | unit 17

Fig. 24

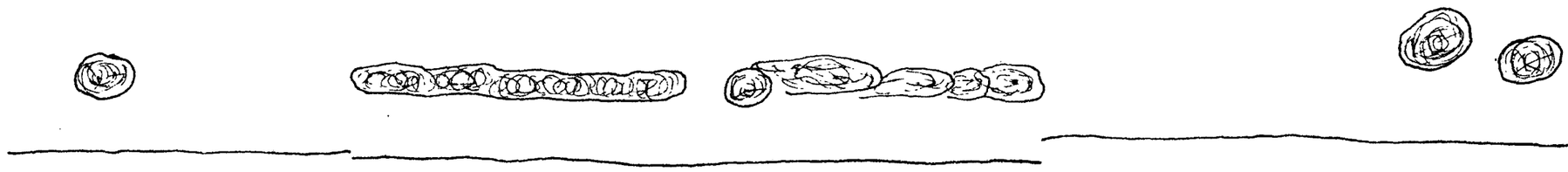

3.8'
N
0 1 2 3 4 5
SOUTH STOCKADE
unit 18
unit 19
unit 20
unit 21
unit 22
unit 23

Fig. 25

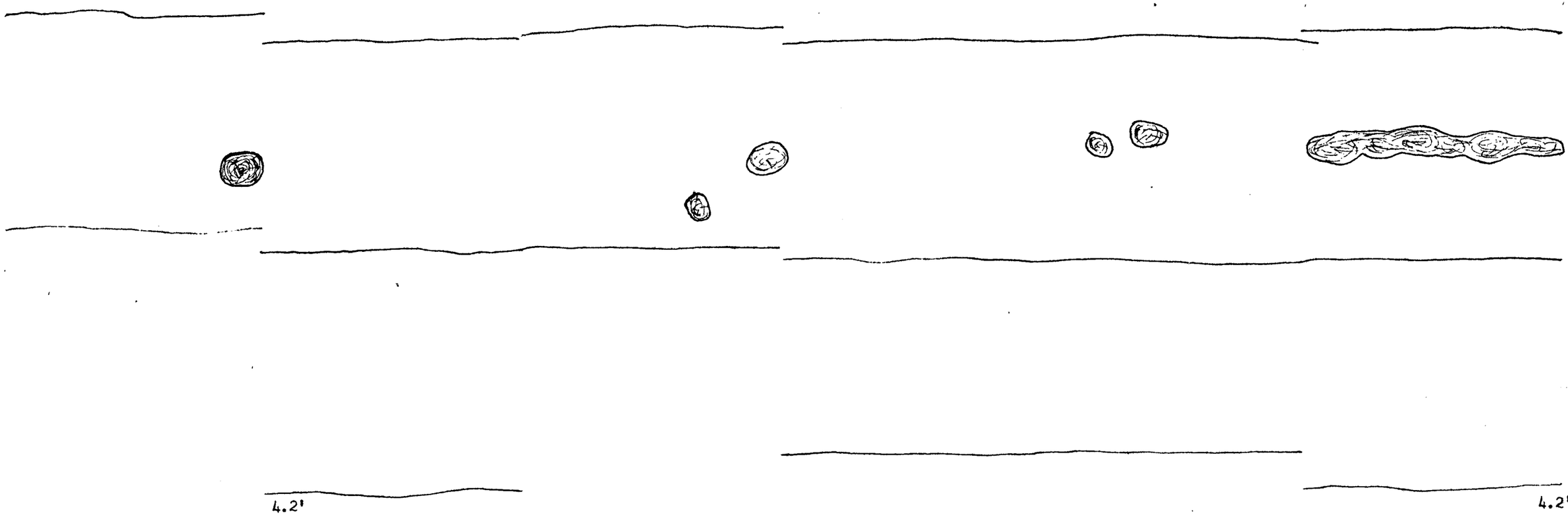

4.2'
4.2'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 24
unit 25
unit 26
unit 27
unit 28
unit 29

Fig. 26

4.2'

4.0'

N

0 1 2 3 4 5
feet

SOUTH STOCKADE

unit 30 | unit 31 | unit 32 | unit 33 | unit 34 | unit 35

Fig. 27

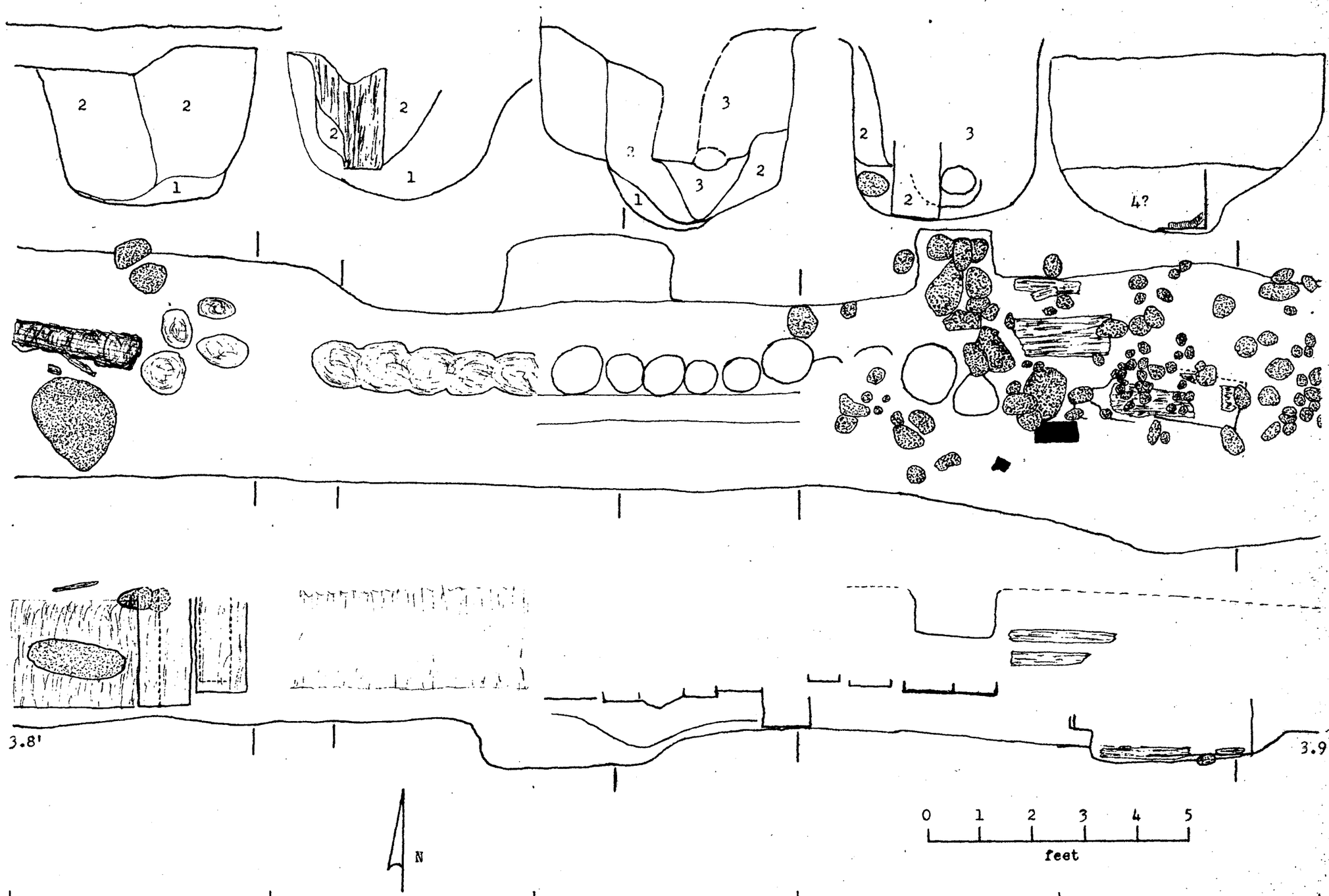

2
2
1
2
2
1
3
3
2
1
2
3
2
2
3
4?
3.8'
3.9'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 36A
unit 36
unit 37
unit 38
unit 39
unit 40

Fig. 28

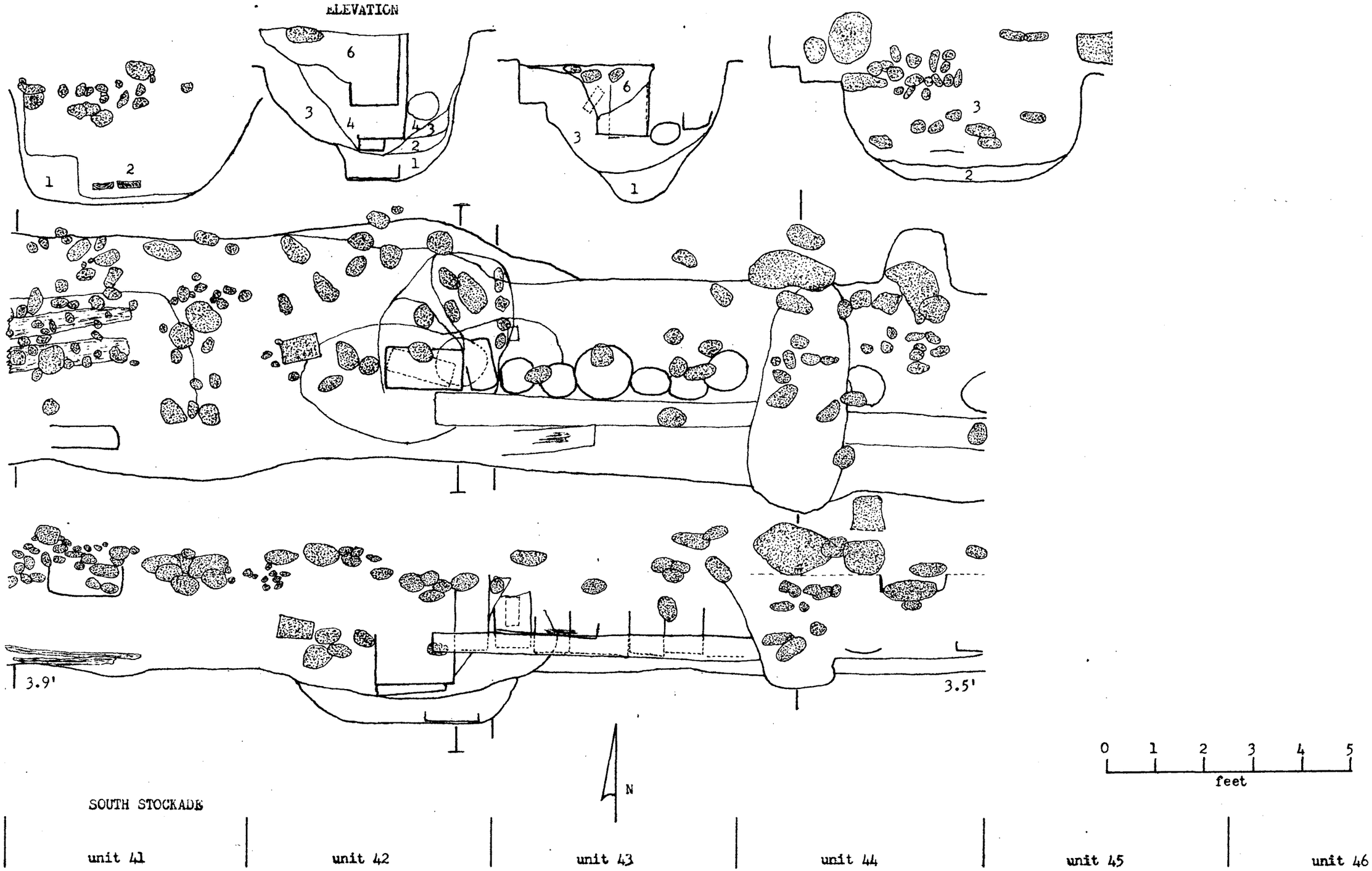

ELEVATION
1
2
6
3
4
4
3
2
1
6
3
1
3
2
3.9'
3.5'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 41
unit 42
unit 43
unit 44
unit 45
unit 46

Fig. 29

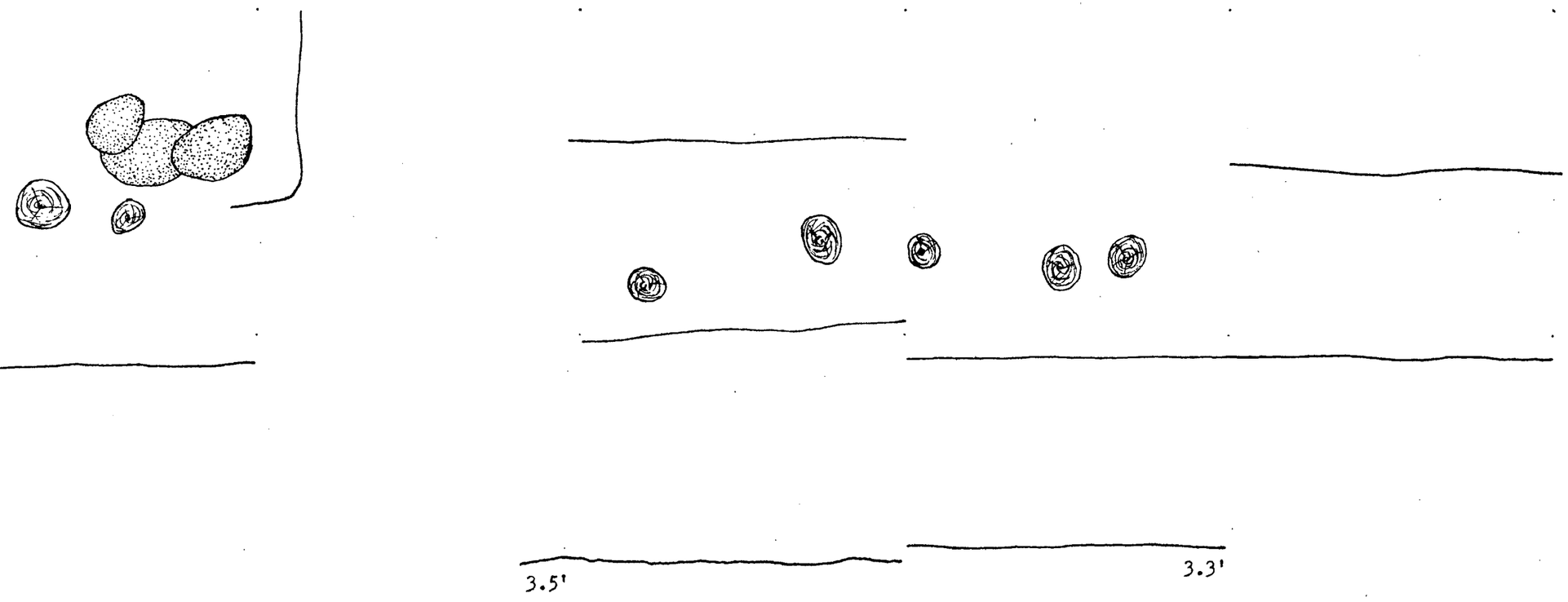

3.5'
3.3'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 47
unit 48
unit 49
unit 50
unit 51
unit 52

Fig. 30

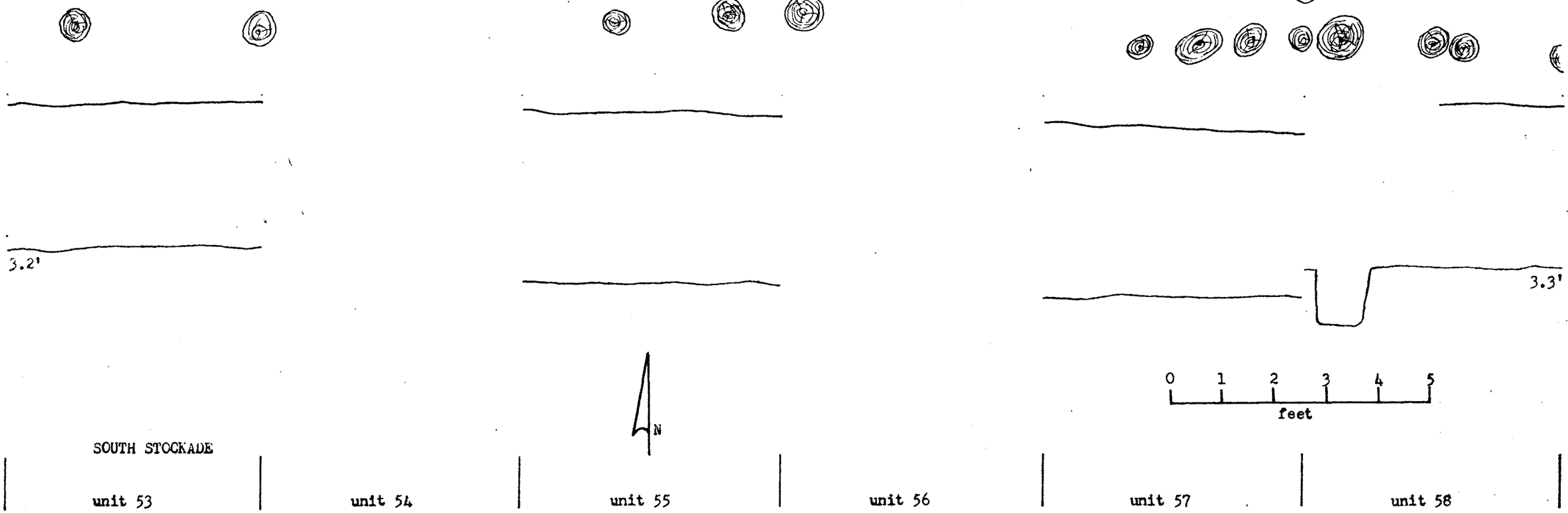

3.2'
3.3'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 53
unit 54
unit 55
unit 56
unit 57
unit 58

Fig. 31

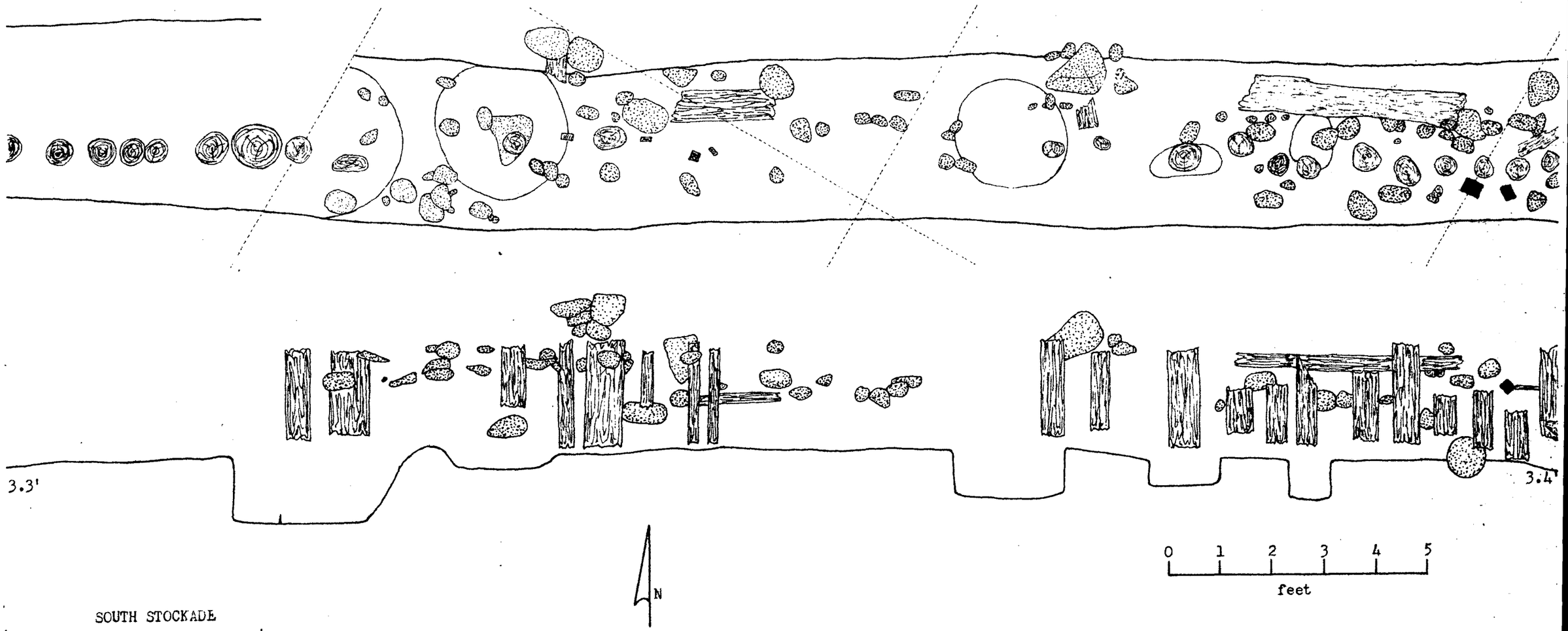
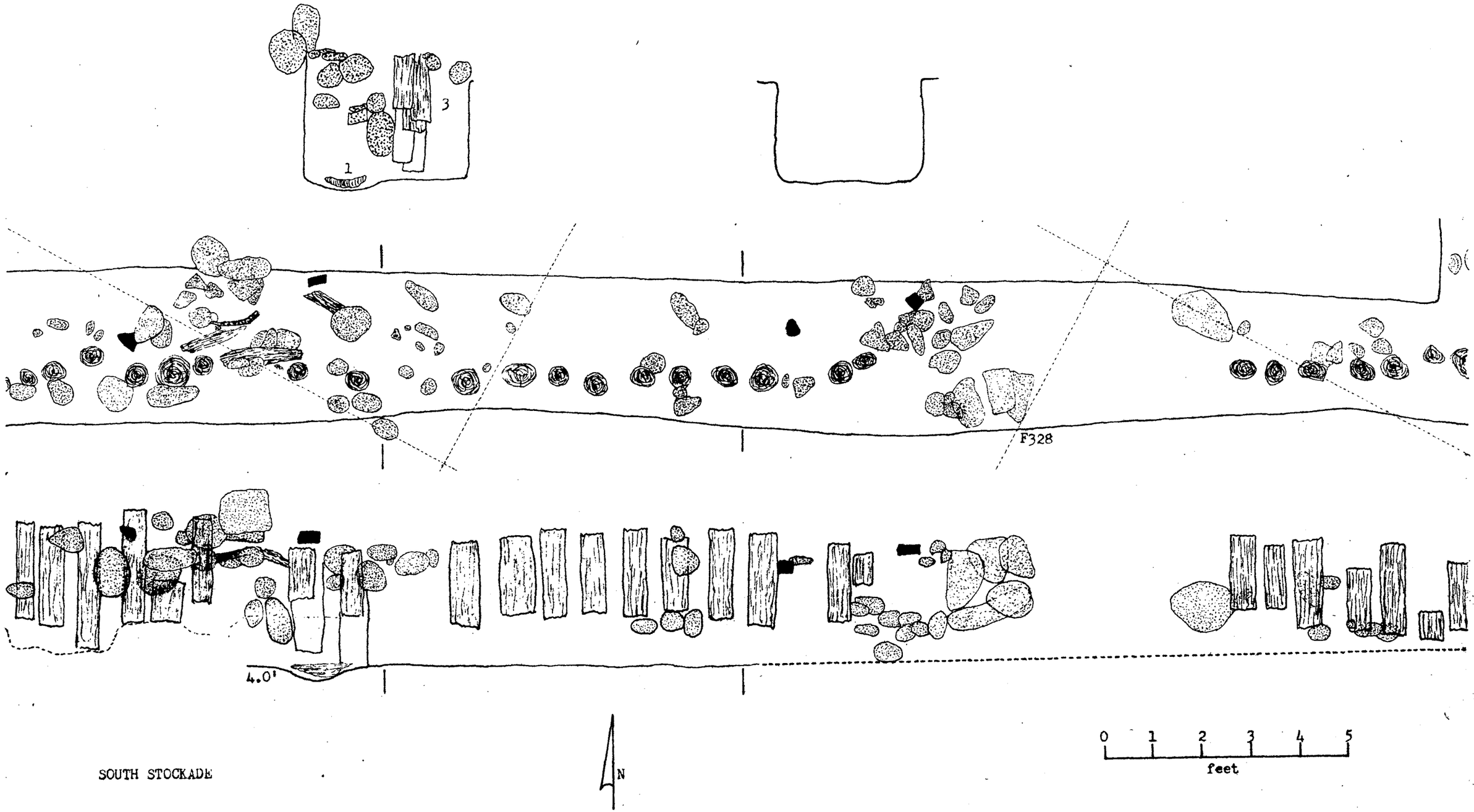

3.3'
3.4'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 59
S250.0 X W200.0
S240.0 X W200.0
S240.0 X W190.0
S240.0 X W180.0

Fig. 32



SOUTH STOCKADE

S240.0 X W180.0 S230.0 X W180.0 S230.0 X W170.0 S230.0 X W160.0 S220.0 X W160.0

Fig. 33

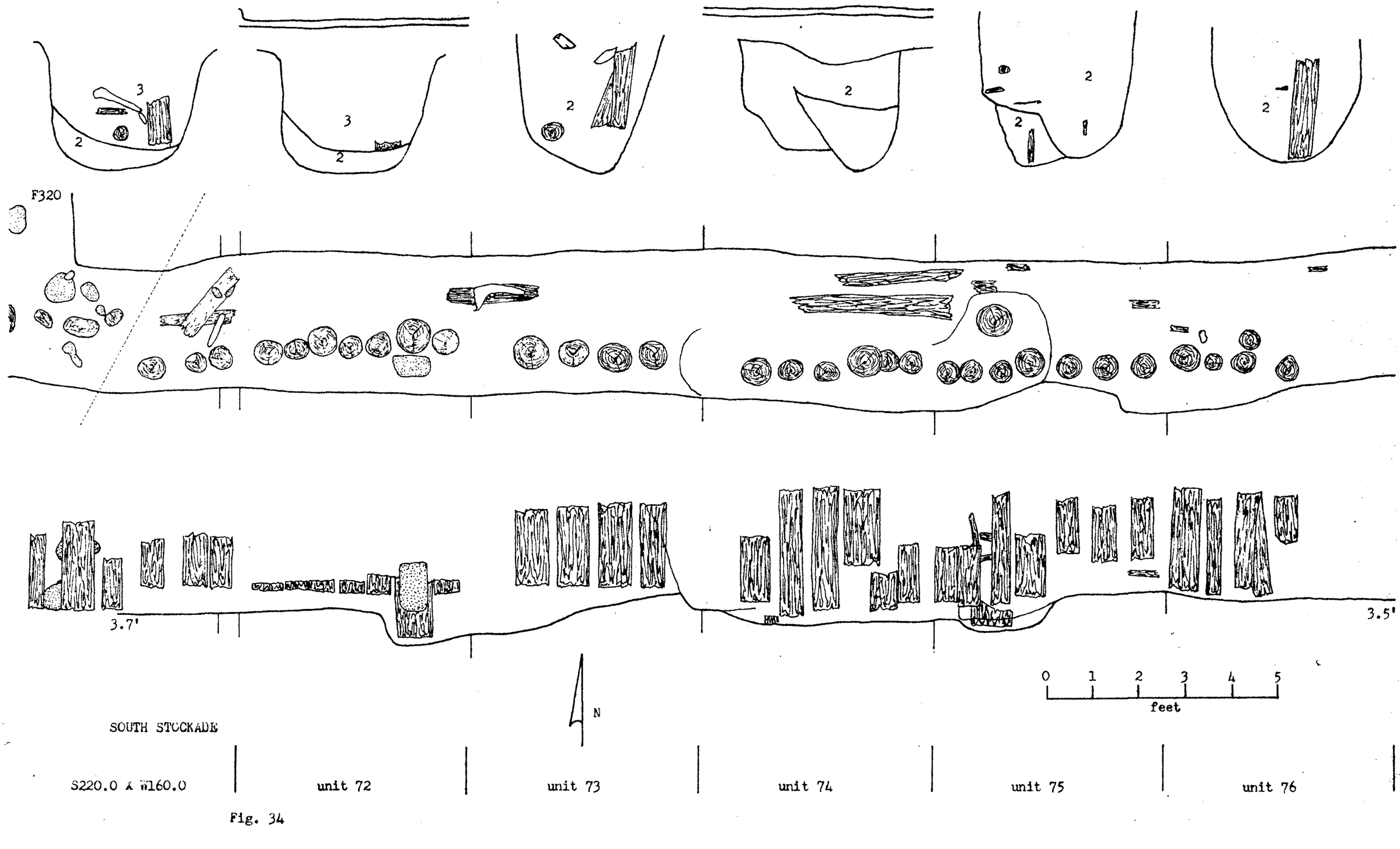

F320
3
2
3
2
2
2
2
2
2
3.7'
3.5'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
S220.0 x W160.0
unit 72
unit 73
unit 74
unit 75
unit 76

Fig. 34

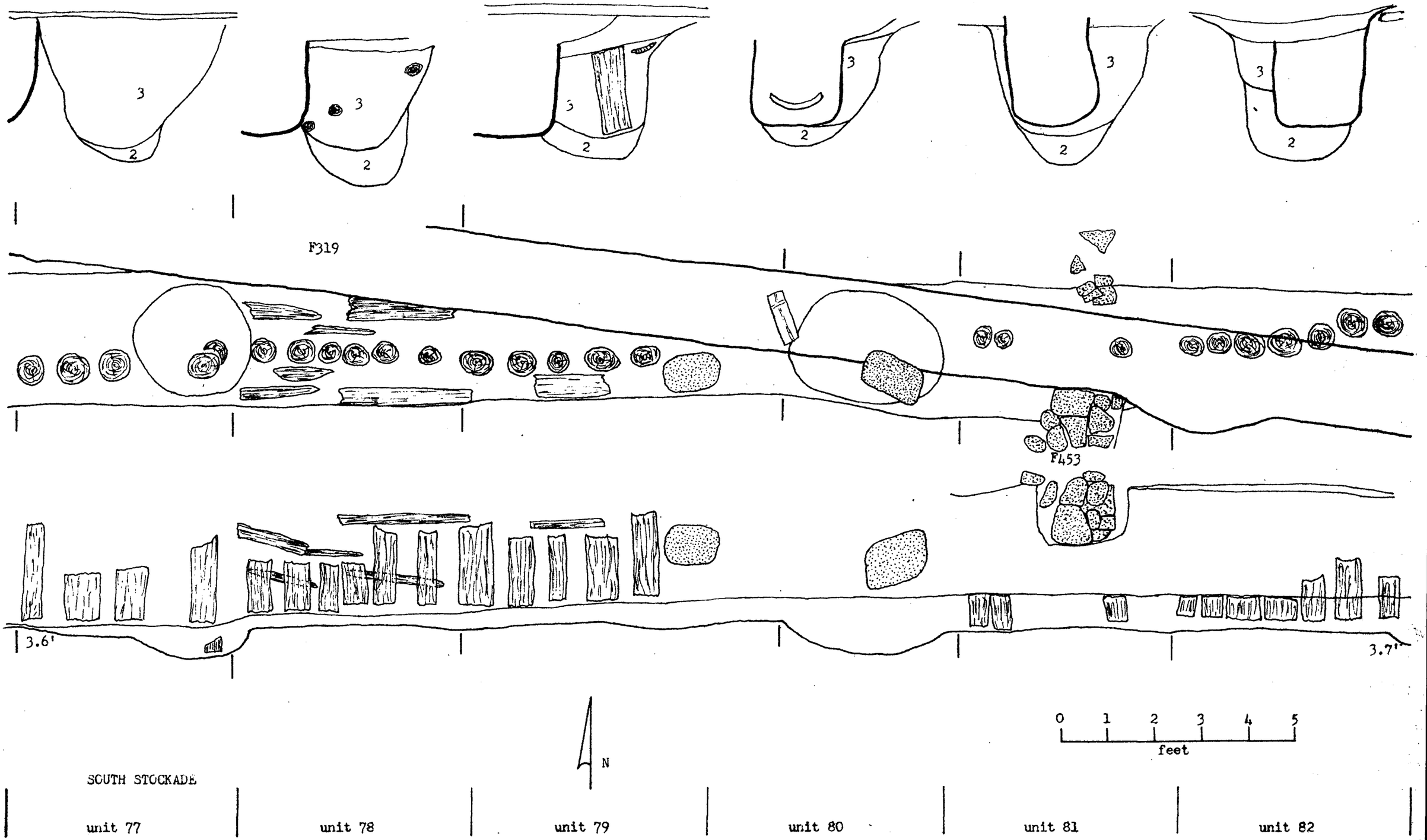

3
2
3
2
3
2
3
2
3
2
F319
F453
3.6'
3.7'
0 1 2 3 4 5
feet
N
SOUTH STOCKADE
unit 77
unit 78
unit 79
unit 80
unit 81
unit 82

Fig. 35

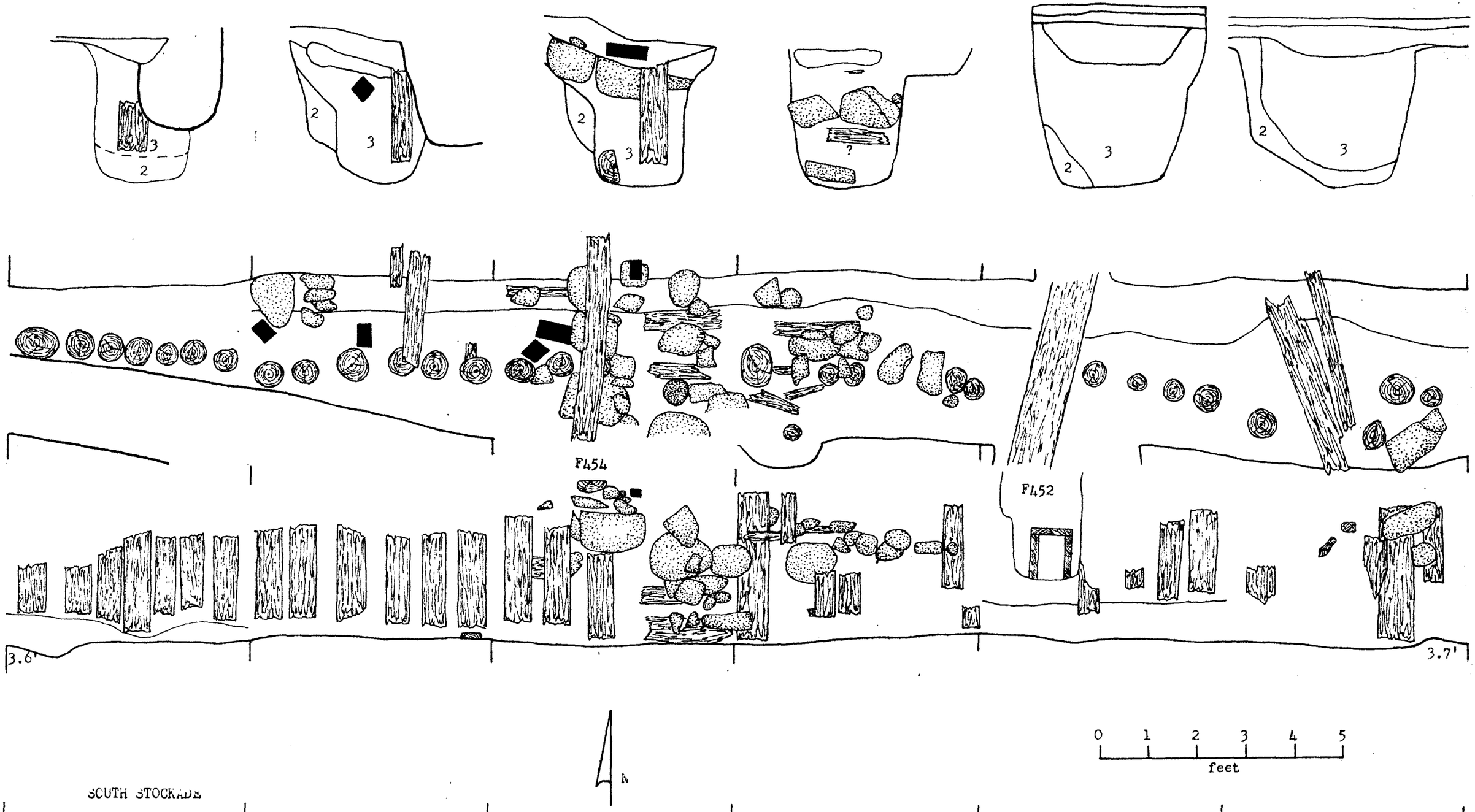

3
2
2
3
2
3
?
2
3
2
3
F454
F452
3.6'
3.7'
0 1 2 3 4 5
feet
N
SOUTH STOCKADE
unit 83
unit 84
unit 85
unit 86
unit 87
unit 88

Fig. 36

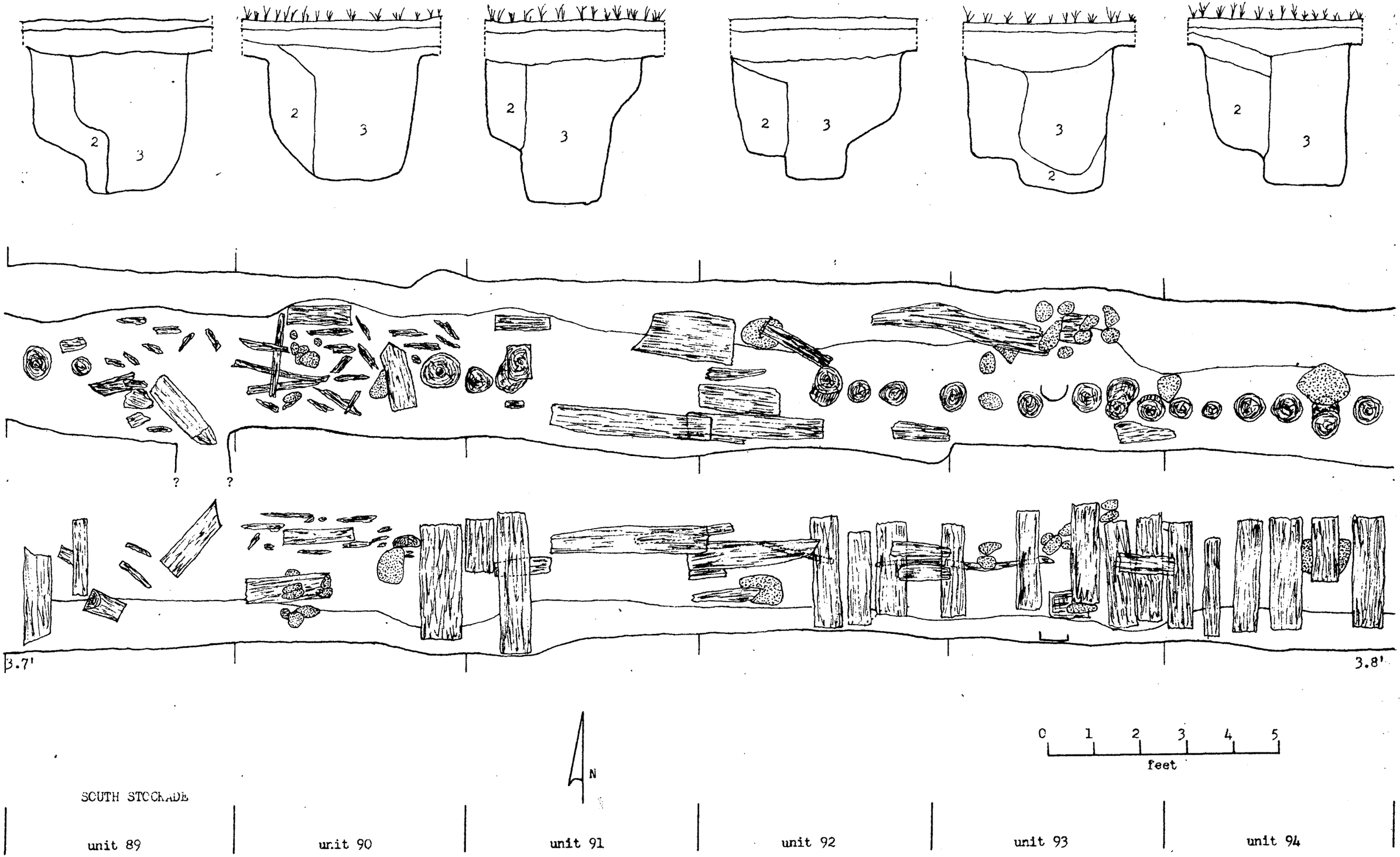

2
3
2
3
2
3
2
3
3
2
2
3
? ?
3.7'
3.8'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 89
unit 90
unit 91
unit 92
unit 93
unit 94

Fig. 37

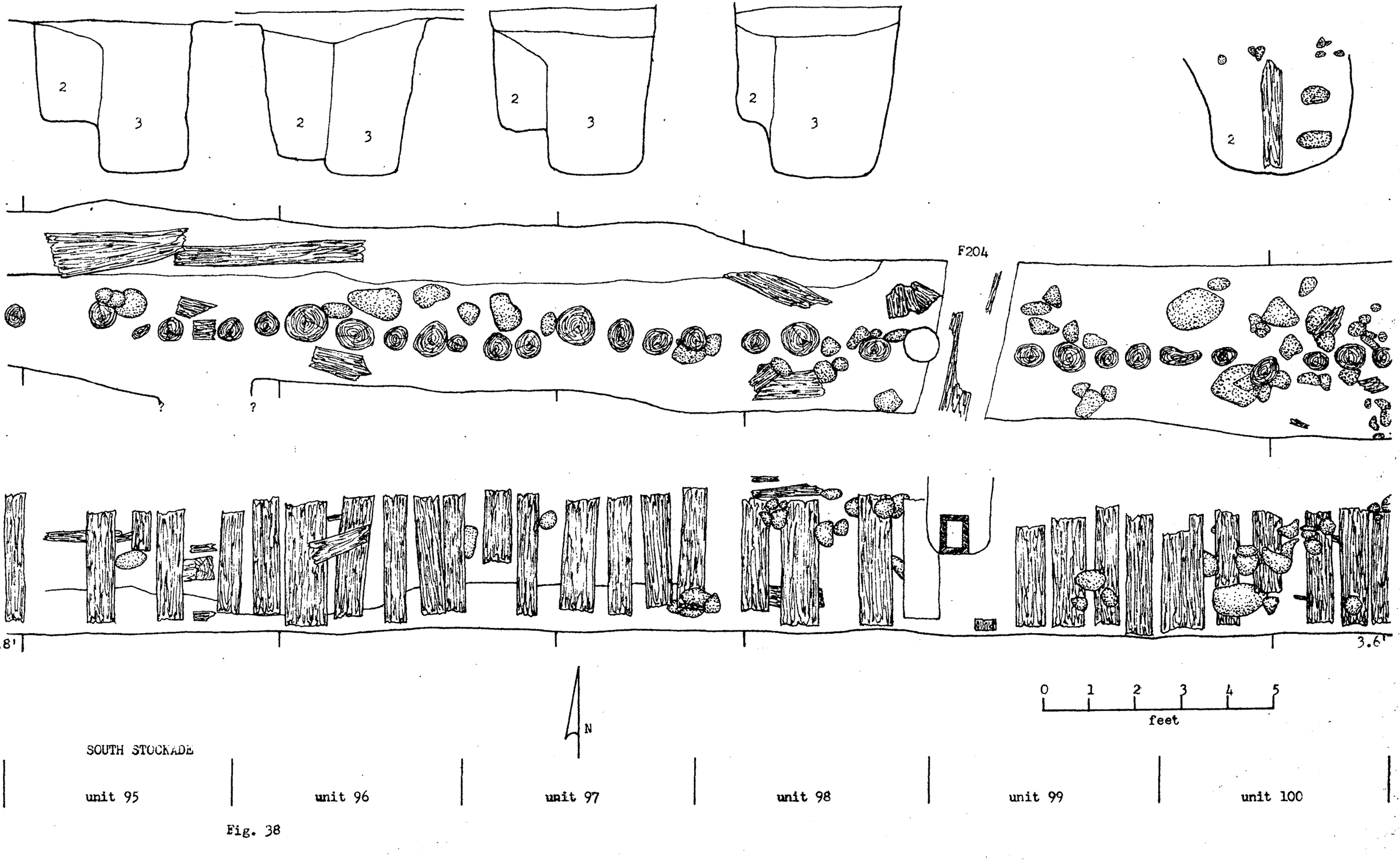

2
3
2
3
2
3
2
3
2
F204
?
?
3.8'
3.6'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 95
unit 96
unit 97
unit 98
unit 99
unit 100

Fig. 38

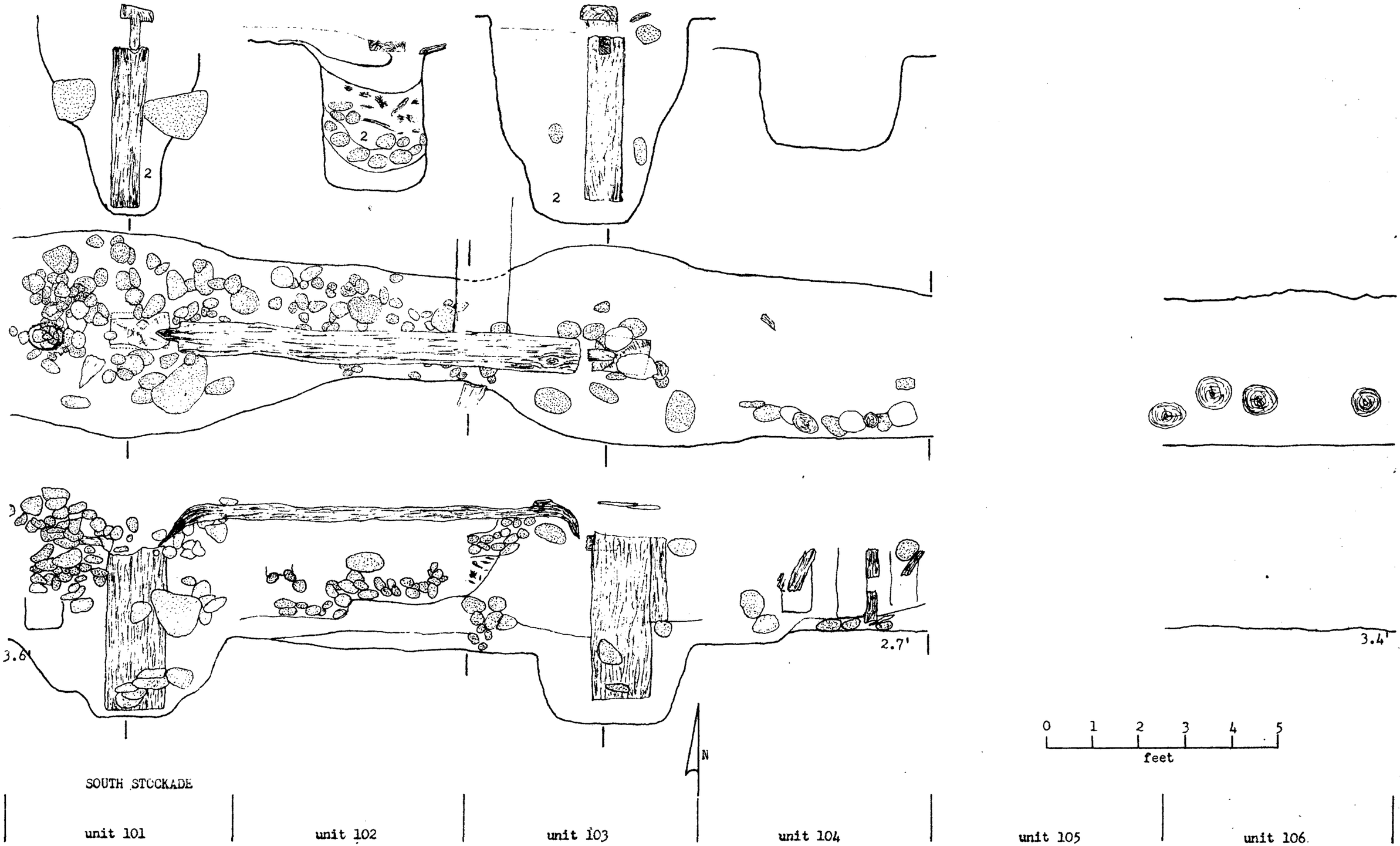

2
2
2
3.6'
2.7'
3.4'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 101
unit 102
unit 103
unit 104
unit 105
unit 106

Fig. 39

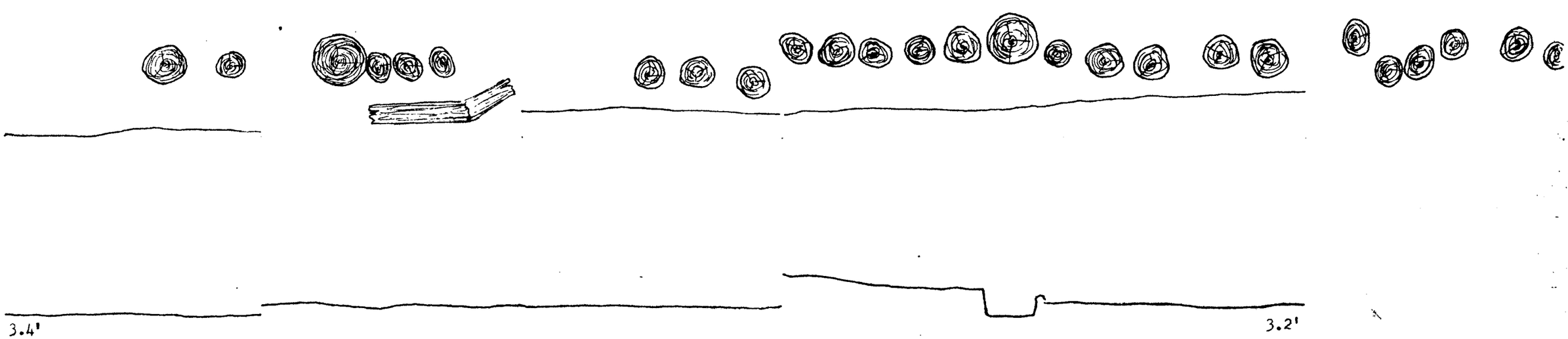
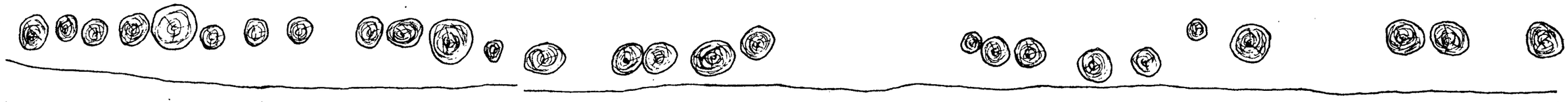
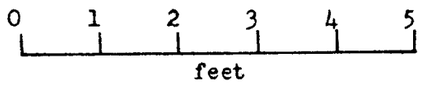

3.4'
3.2'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 107
unit 108
unit 109
unit 110
unit 111
unit 112

Fig. 40





SOUTH STOCKADE

unit 113 | unit 114 | unit 115 | unit 116 | unit 117 | unit 118

Fig. 41

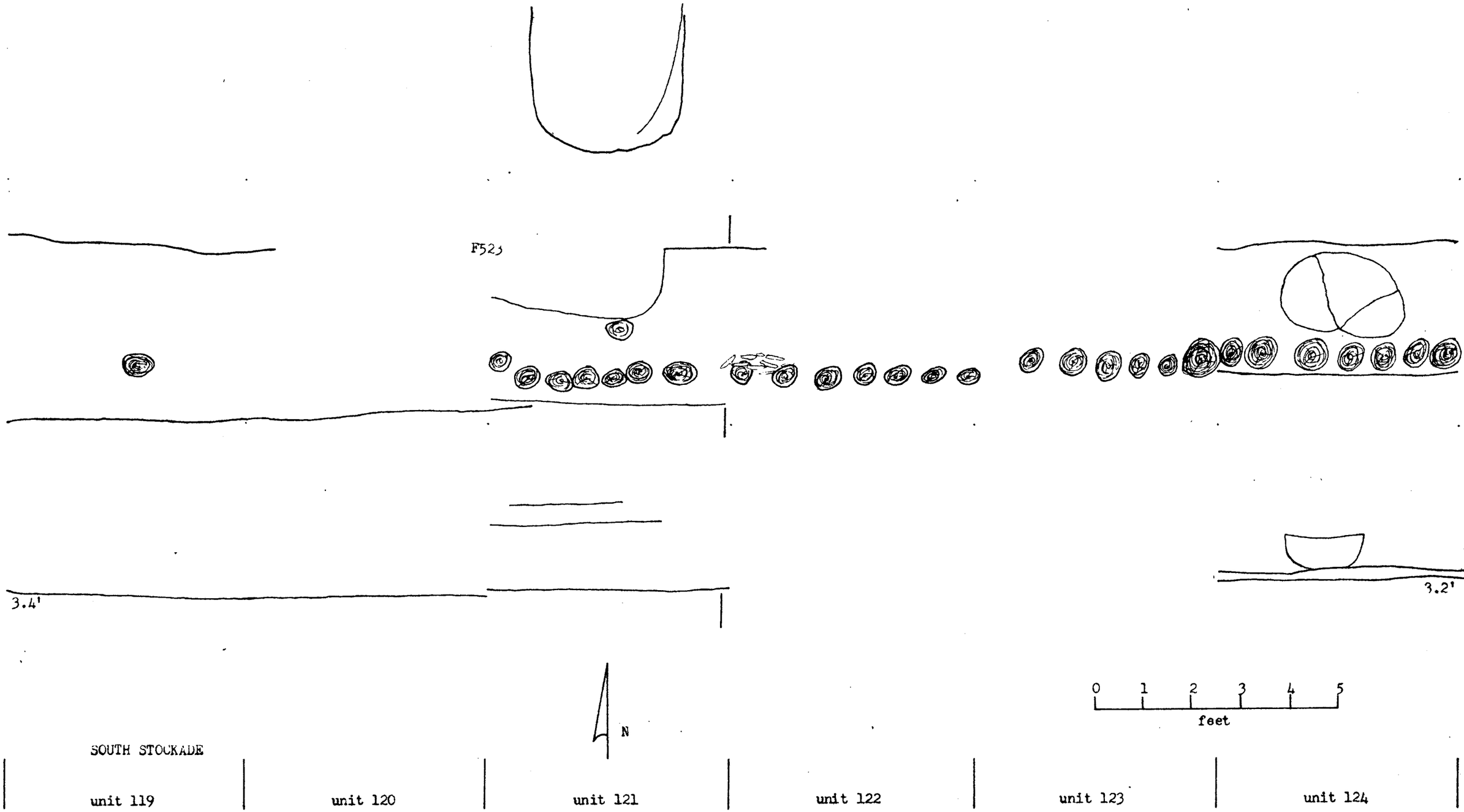

F523
3.4'
3.2'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 119
unit 120
unit 121
unit 122
unit 123
unit 124

Fig. 42

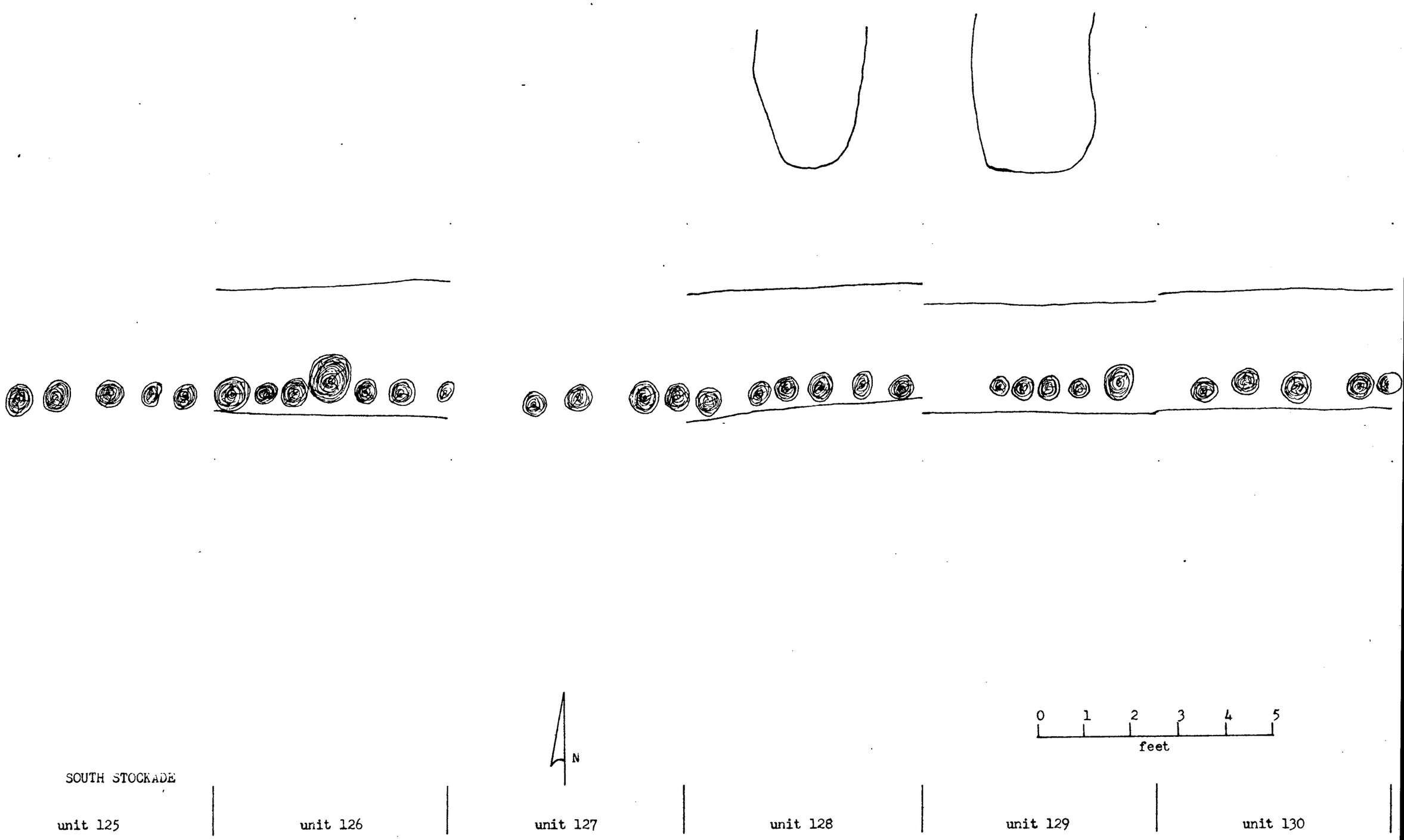

N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 125
unit 126
unit 127
unit 128
unit 129
unit 130

Fig. 43

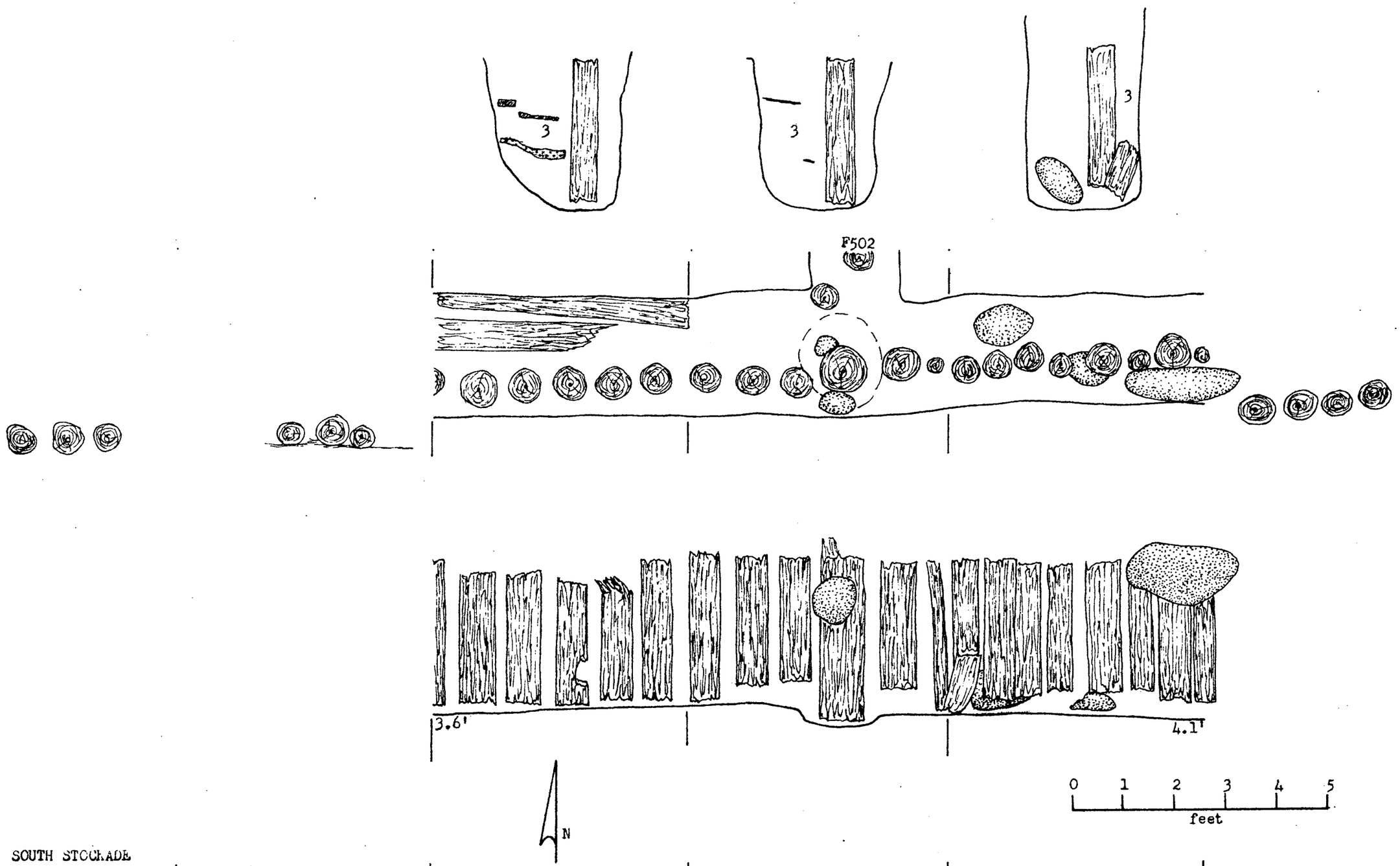

3
3
3
F502
3.6'
4.1'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
unit 131
unit 132
unit 133
unit 134
unit 135
unit 136

Fig. 44

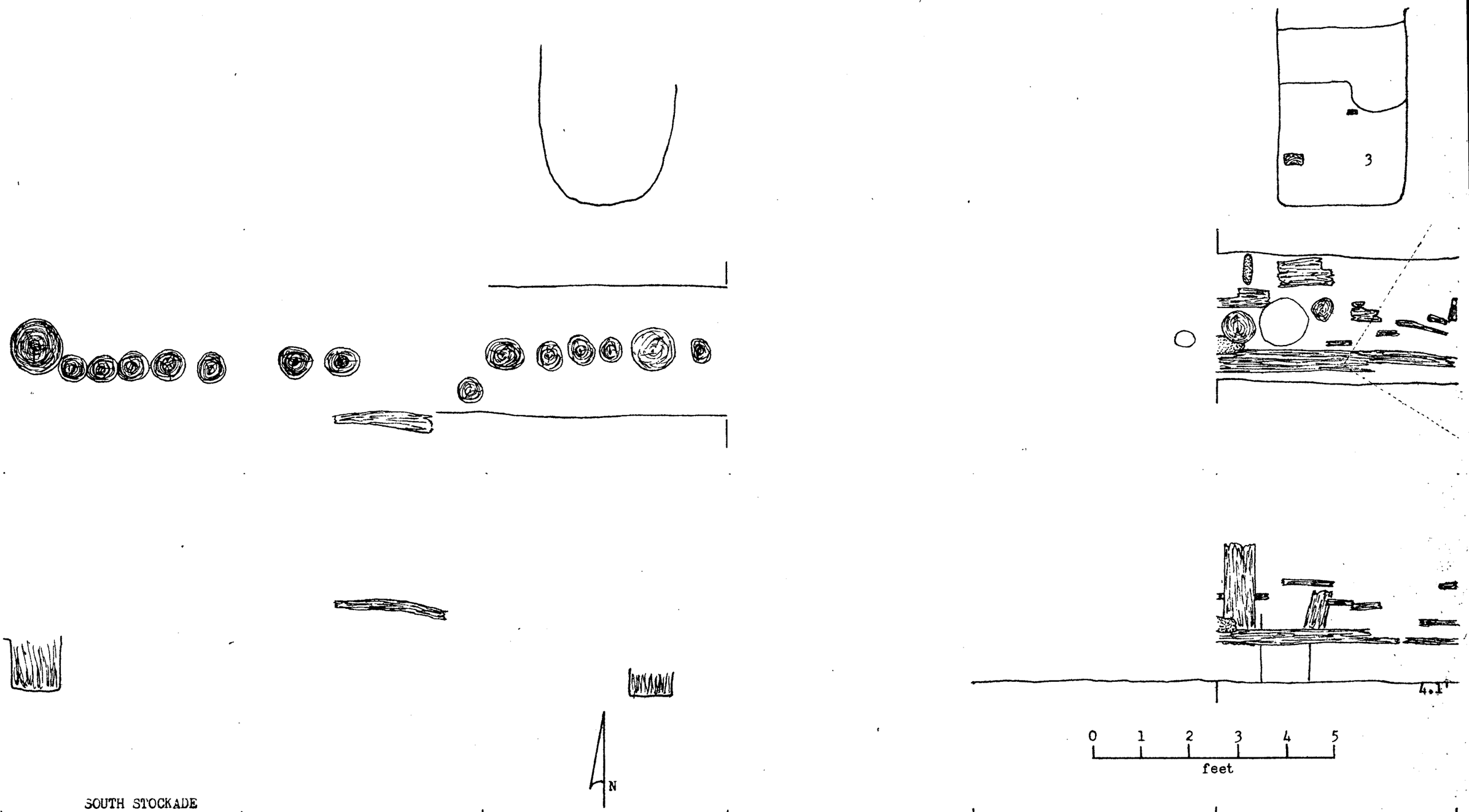

3
4.1'
0 1 2 3 4 5
feet
N
SOUTH STOCKADE
unit 137
unit 138
unit 139
unit 140
unit 141
unit 142

Fig. 45

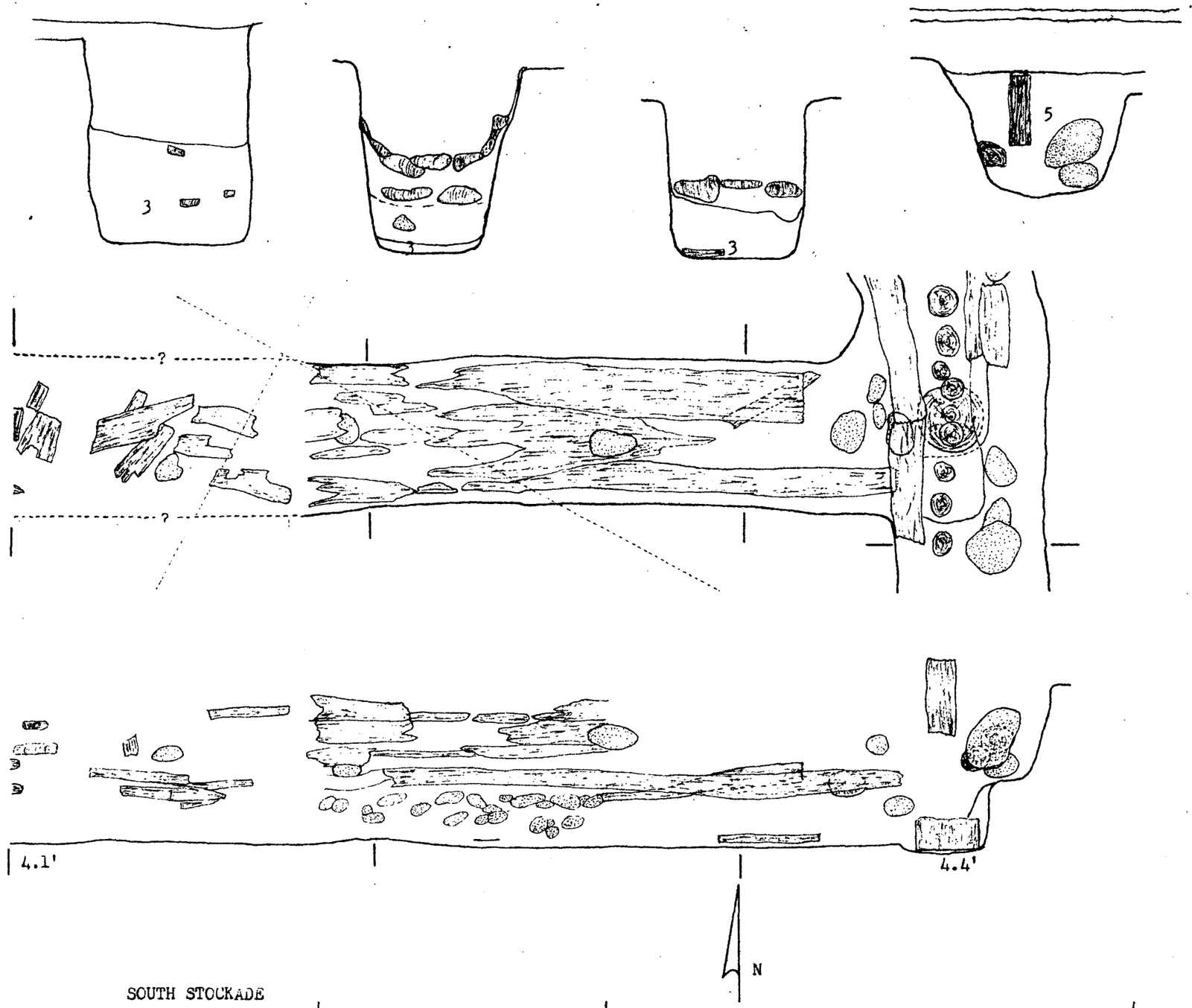
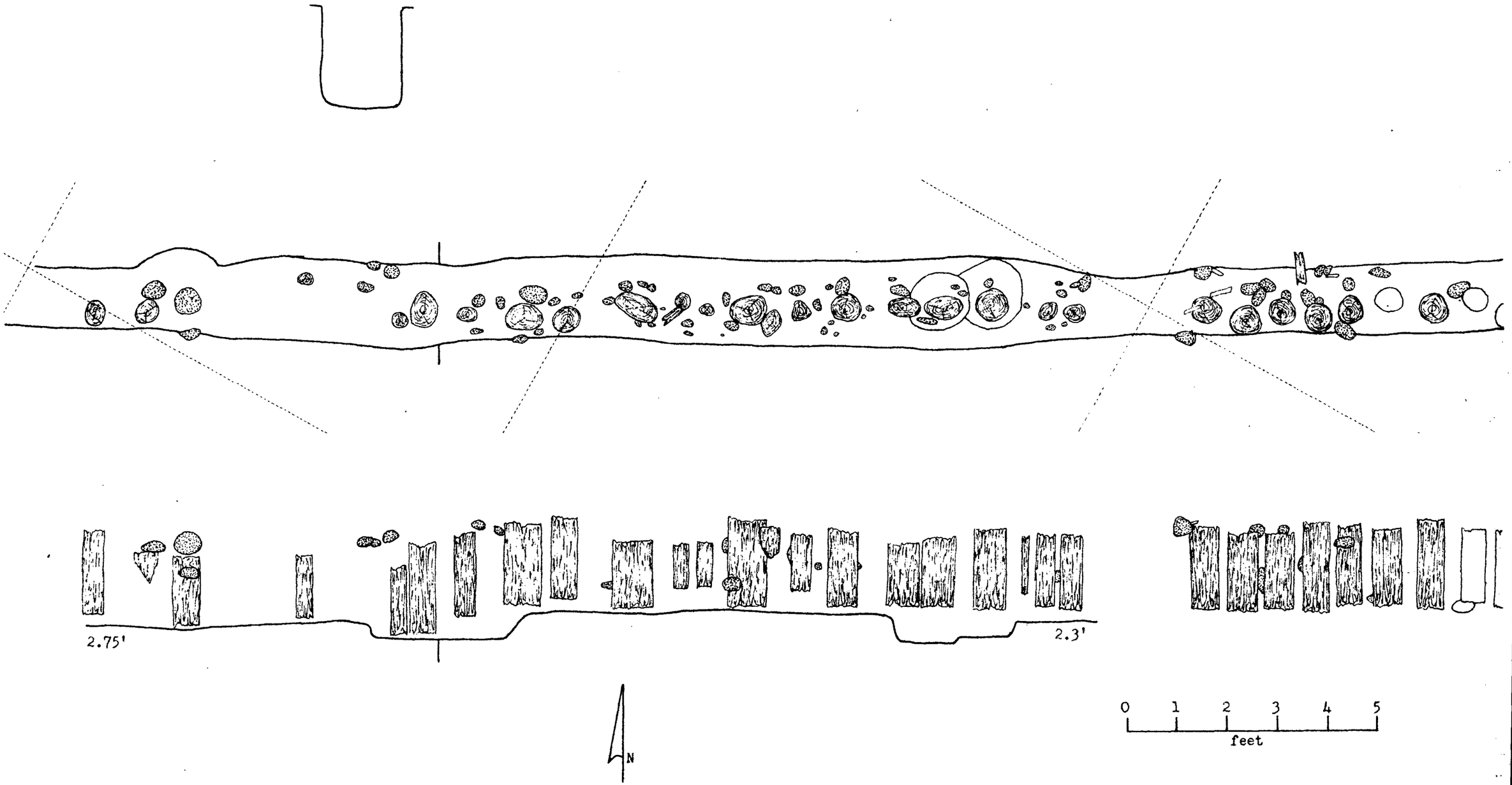

3
3
5
?
?
4.1'
4.4'
N
0 1 2 3 4 5
feet
SOUTH STOCKADE
S45.0 X E165.0
S50.0 X E175.0
unit 144
unit 145

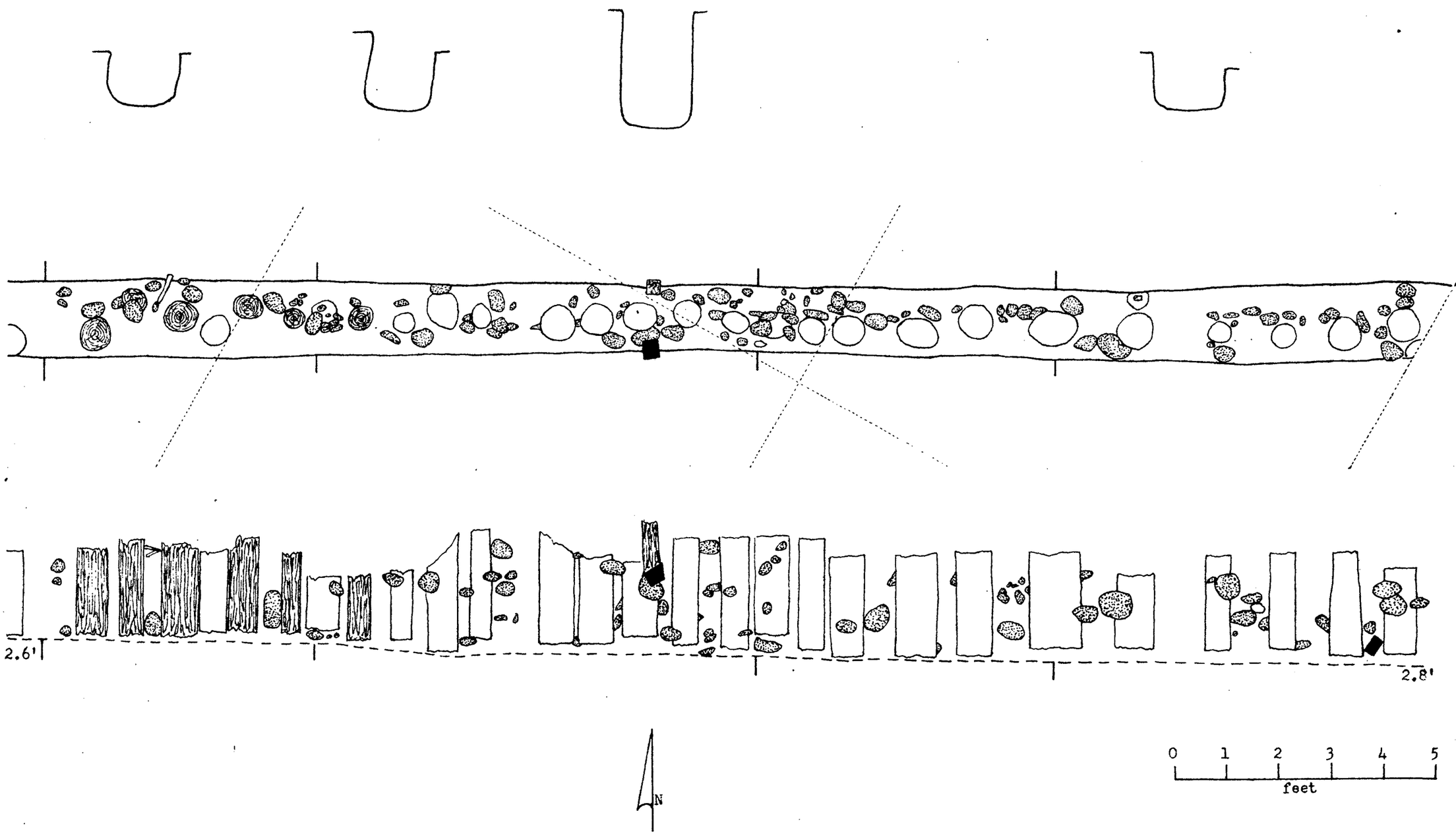
Fig. 46



OUTER SOUTH STOCKADE

S250.0 x W200.0 S250.0 X W190.0 S240.0 X W180.0

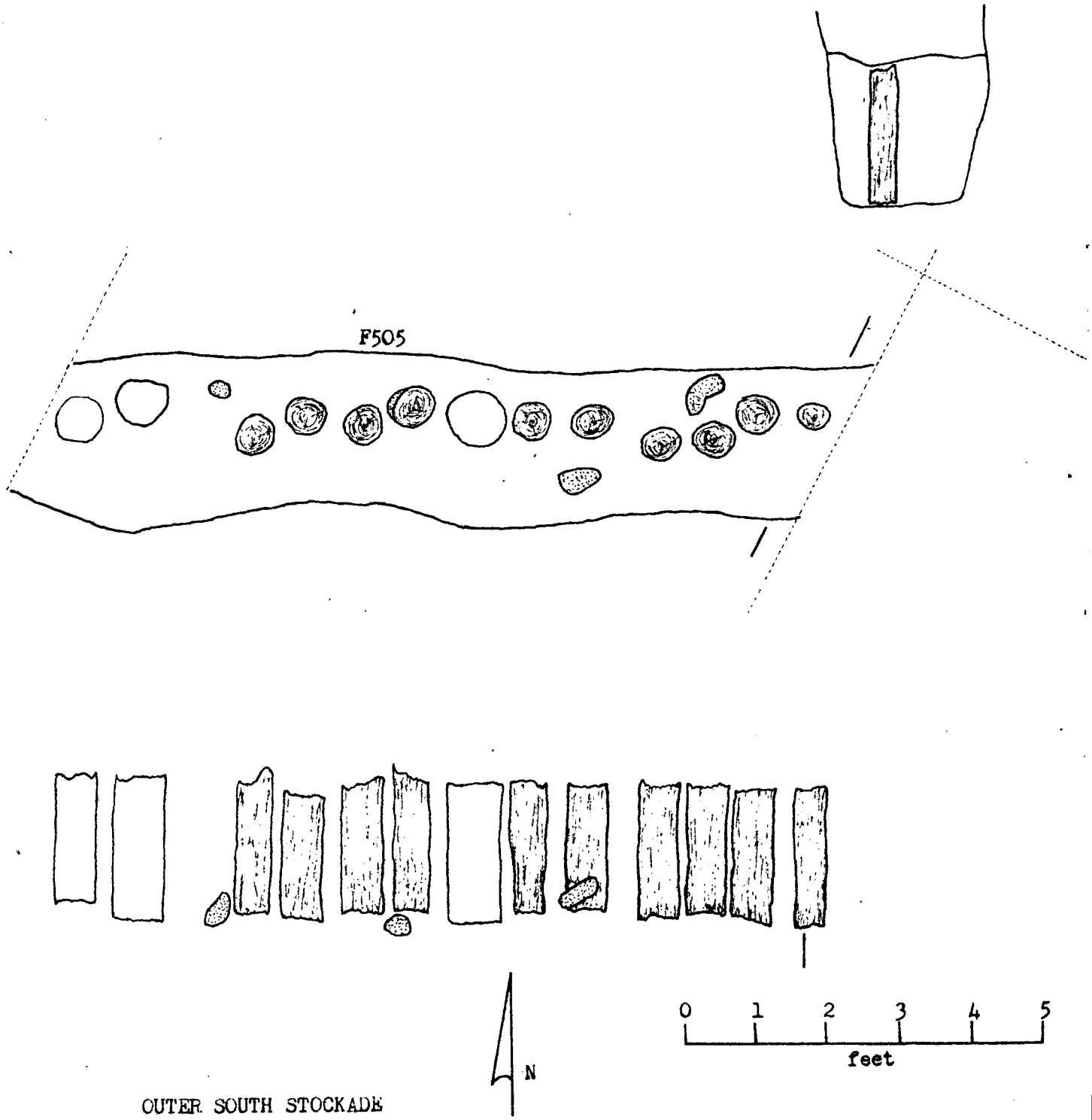
Fig. 47



OUTER SOUTH STOCKADE

S240.0 x W180.0 S240.0 x W170.0 S230.0 x W170.0 S230.0 x W160.0

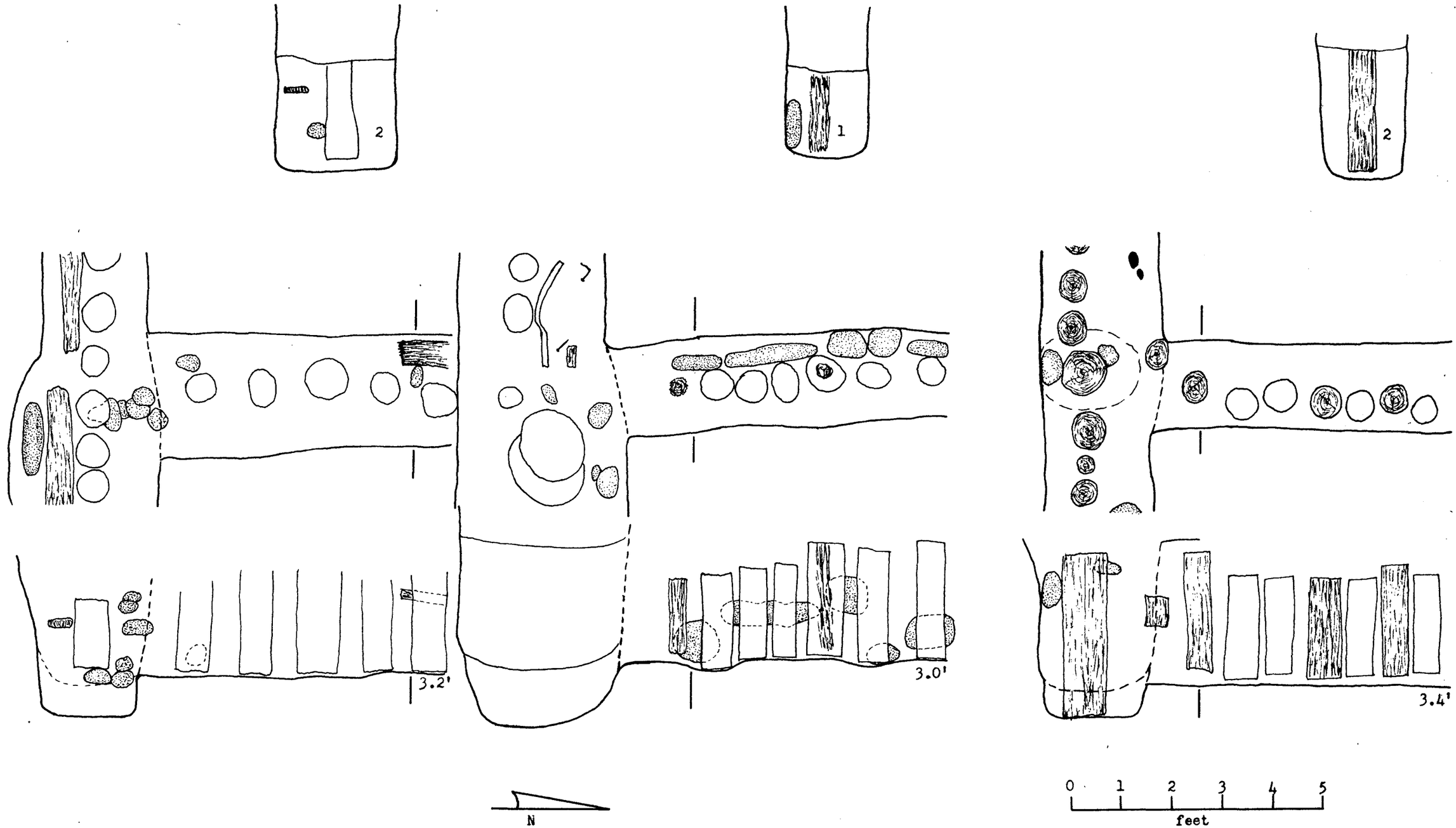
Fig. 48



OUTER SOUTH STOCKADE

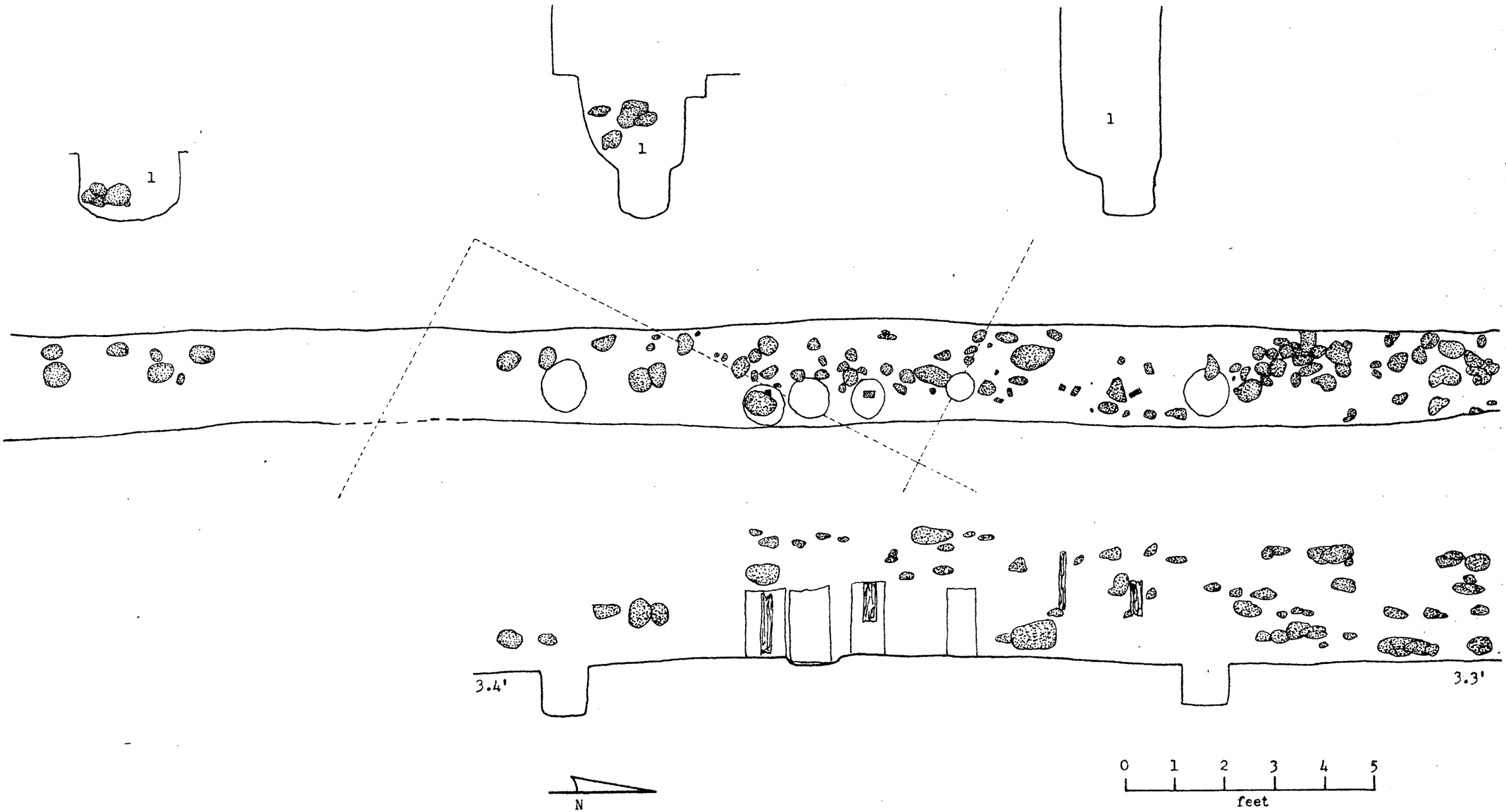
S50.0 X E175.0

Fig. 49



SOUTH STOCKADE unit 3 | MIDDLE WEST STOCKADE | SOUTH STOCKADE unit 8 | INNER WEST STOCKADE | SOUTH STOCKADE unit 134 | MIDDLE EAST STOCKADE

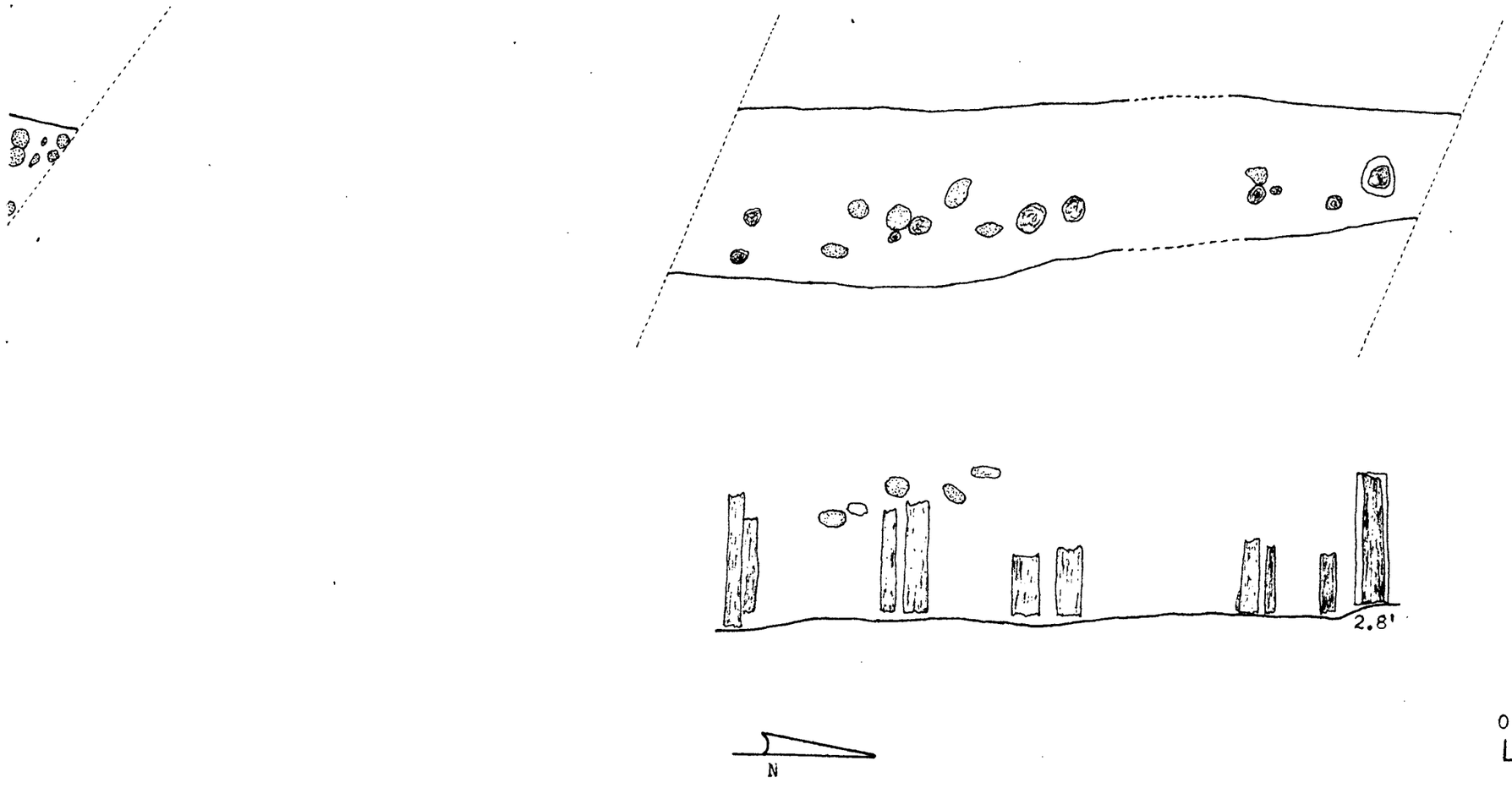
Fig. 50



INNER EAST STOCKADE

S220.0 X W160.0 S210.0 X W160.0 S210.0 X W160.0 S200.0 X W170.0

Fig. 51

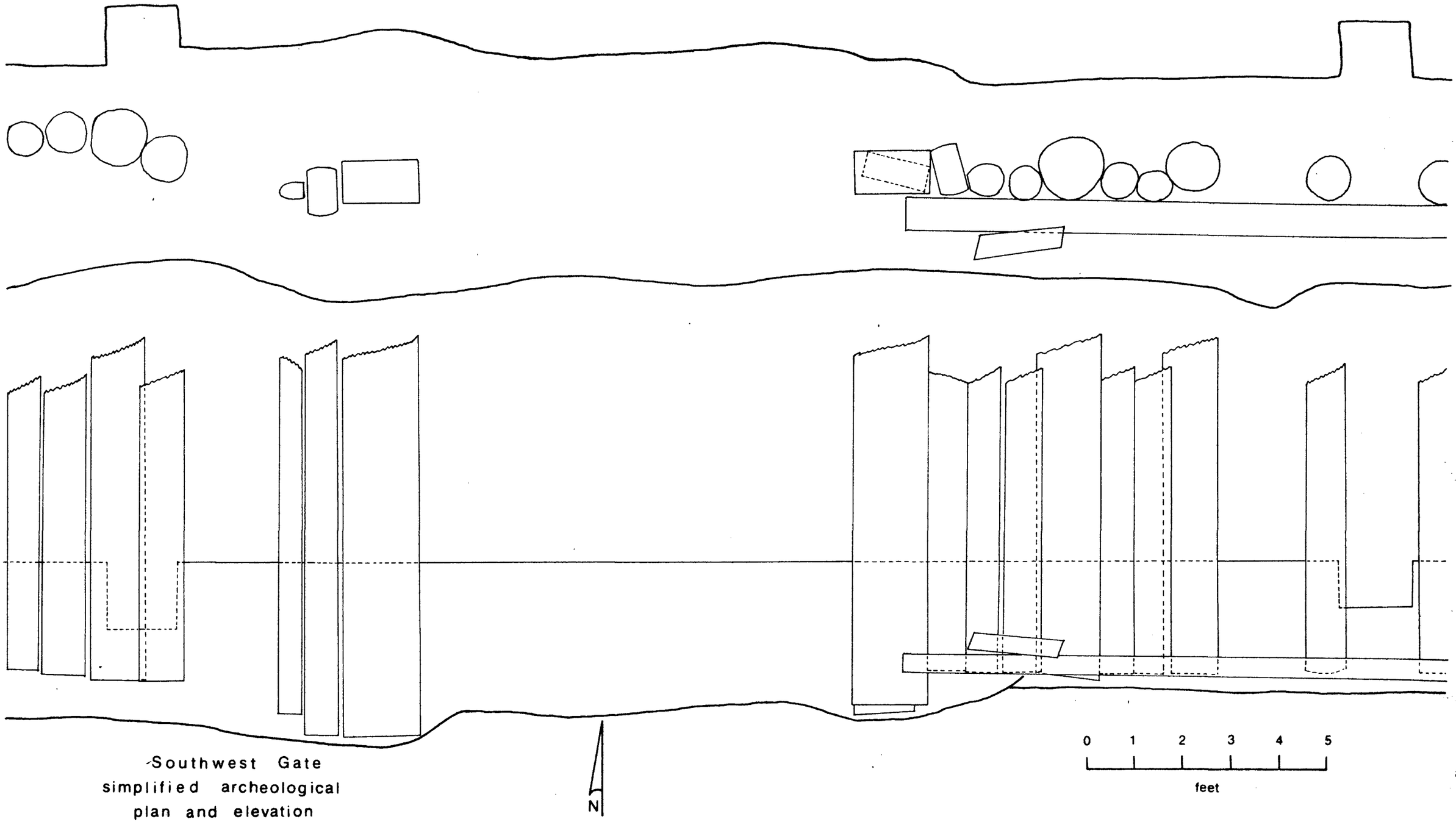


INNER EAST STOCKADE

S200.0 x W 170.0

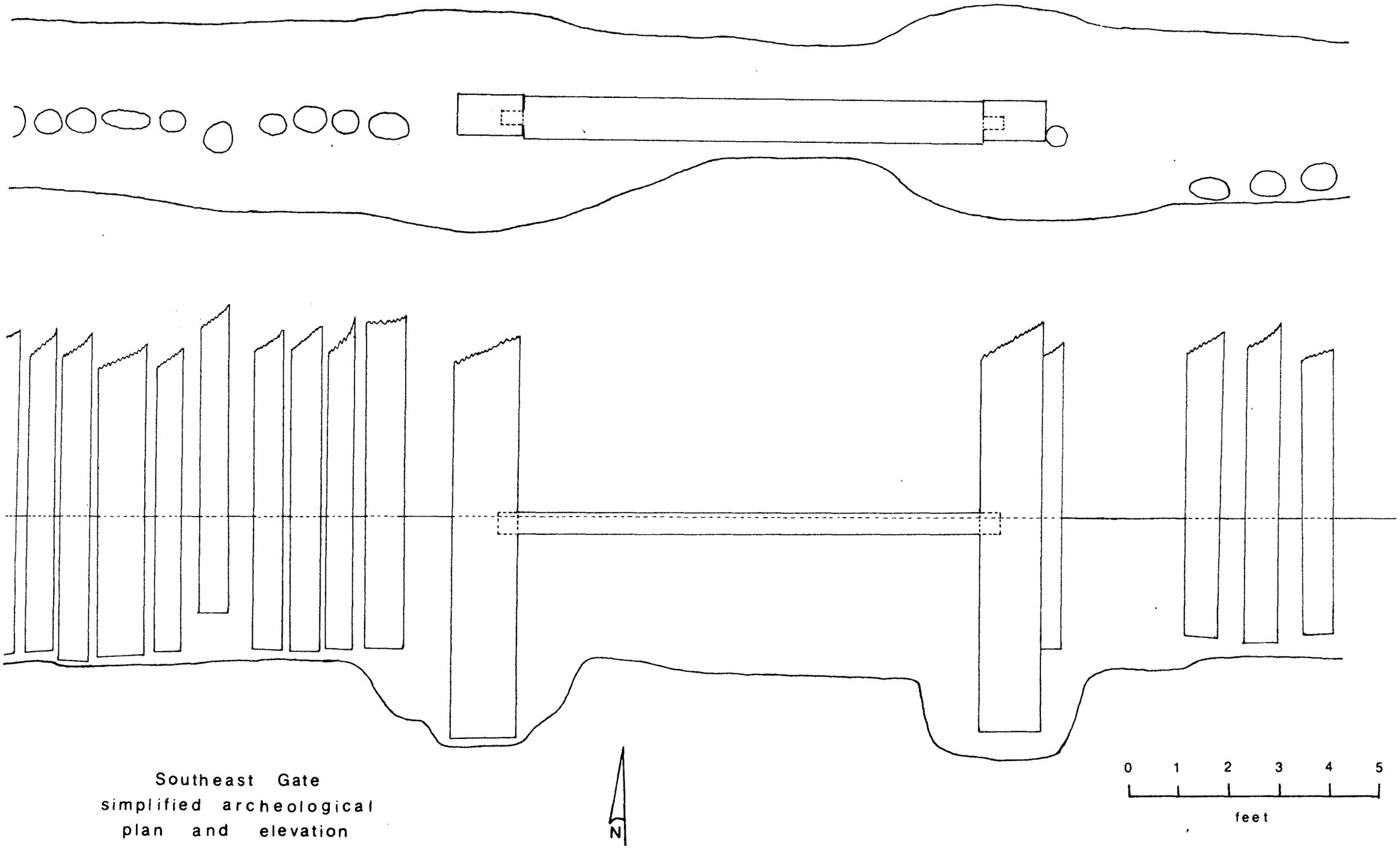
S160.0 X W190.0

Fig. 52



Southwest Gate
simplified archeological
plan and elevation

Fig. 53



Southeast Gate
simplified archeological
plan and elevation

Fig. 54

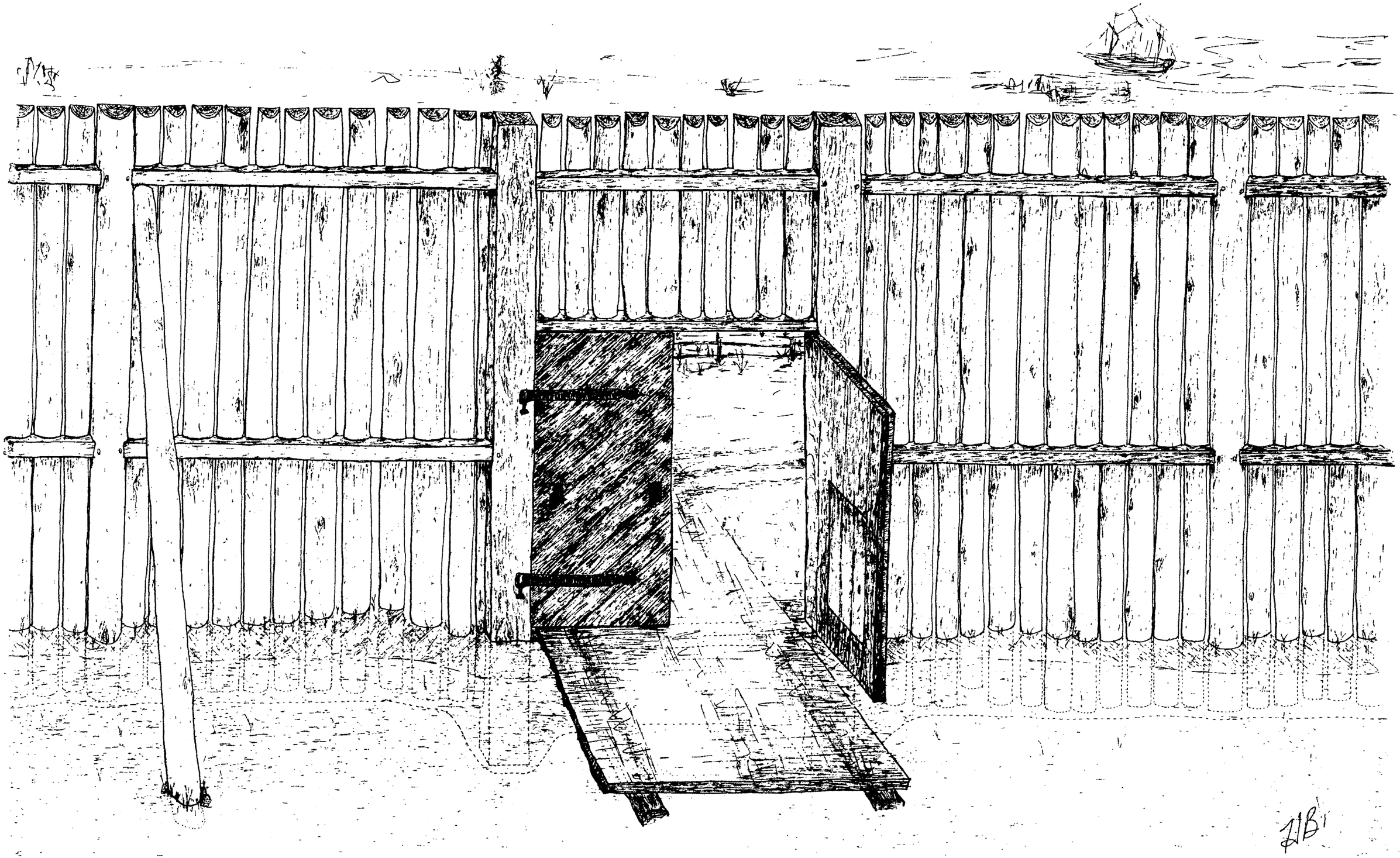


Fig. 55

VI - STOCKADE ARTIFACTS

A large amount of cultural material was recovered from the stockade excavations. In the hand dug areas, material was collected in such a way as to permit future analyses of specimens in relation to postulated construction events. Such analysas have not been made for this report as a matter of economy. As mentioned before, stockade artifacts are best considered as a general trash sampling of the site. Lacking critical information such as heavy hardware at gate positions, little account was taken of cultural materials for planning of the stockade reconstruction.

In keeping with other goals of the archeological project, we have prepared inventories of stockade materials which are presented as Tables 6 through 24. These inventories are compiled from gross proveniences only. Should future research require analyses and more exacting information, the data will be found within the archeological files of Fort Vancouver National Historic Site.

Table 6 - Cultural materials from West Stockade A-N.

Artifact Category	Sub-Total	Total
CERAMIC WARES		472
Common Pottery Fragments	12	
Earthenware Fragments	374	
Stoneware Fragments	74	
Vitreous China Fragments	10	
Porcelain Fragments	2	
CERAMIC OBJECTS		94
Kaolin Pipe Fragments	94	
GLASS OBJECTS		691
Bottle Fragments	419	
Tumbler Fragments	18	
Stemmed Glassware Fragments	4	
Unidentified Curved Glass Fragments	57	
Unidentified Molded Curved Glass Fragment	1	
Window Glass Fragments	181	
Beads	11	
METAL OBJECTS		825
Square Nails	441	
Wire Nails	63	
Bateau Bolt	1	
Rove	1	
Bolt	1	
Bolts and Nuts	8	
Nuts	3	
Washers	3	
Cotter Pins	5	
Door Lock	1	
Hinge	1	
Hinge Preform	1	
Shovel Blade	1	
Knife Blades	2	
Pocket Knife	1	
Buttons	3	
Trap Spring	1	
Cartridges	19	
Bullet	1	
Ball and Shot	2	
Ring	2	
Straps	8	
Wire Fragments	91	
Cable Fragment	1	
Unidentified Metal Objects	11	
Unidentified Metal Fragments	153	

Table 6 (cont'd.)

Artifact Category	Sub-Total	Total
STONE OBJECTS		5
Gunflint	1	
Flaked Stone	1	
Detritus	3	
LEATHER OBJECTS		2
Shoe Sole	1	
Glove	1	
WOODEN OBJECT		1
Cork Stopper	1	
MISCELLANEOUS OBJECTS		28
Brick Fragments	22	
Tile Fragment	1	
Mortar Fragments	2	
Unidentified Organic Material	3	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		2118

Non-Artifact Category	Total
Asphaltum	1
Bone	138
Clinkers	8
Coal	18
Slag	1
Wood Fragments	7
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	173

Table 7 - Cultural materials from West Stockade A-N, period 1.

Artifact Category	Sub-Total	Total
CERAMIC WARES		27
Common Pottery Fragment	1	
Earthenware Fragments	18	
Stoneware Fragments	3	
Vitreous China Fragments	5	
CERAMIC OBJECTS		27
Kaolin Pipe Fragments	25	
Buttons	2	
GLASS OBJECTS		95
Bottle Fragments	26	
Tumbler Fragments	4	
Unidentified Curved Glass Fragments	8	
Window Glass Fragments	54	
Beads	3	
METAL OBJECTS		177
Square Nails	152	
Wire Nails	3	
Button	1	
Shot	3	
Wire	6	
Strap	1	
Unidentified Metal Objects	2	
Unidentified Metal Fragments	9	
STONE OBJECT		1
Flaked Stone	1	
MISCELLANEOUS OBJECTS		16
Brick Fragments	2	
Tile Fragment	1	
Tar Paper Fragments	13	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		343

Non-Artifact Category	Total
Asphaltum	1
Bone	2
Coal	1
Wood Fragment	1
Unidentified Organic Material	3
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	8

Table 8 - Cultural materials from West Stockade A-N, period 2.

Artifact Category	Sub-Total	Total
CERAMIC WARES		159
Common Pottery Fragments	12	
Earthenware Fragments	114	
Stoneware Fragments	33	
CERAMIC OBJECTS		394
Kaolin Pipe Fragments	394	
GLASS OBJECTS		112
Bottle Fragments	43	
Tumbler Fragments	3	
Unidentified Curved Glass Fragments	7	
Window Glass Fragments	53	
Mirror Glass Fragments	2	
Beads	4	
METAL OBJECTS		358
Square Nails	263	
Wire Nails	2	
Washer	1	
Blacksmiths Tong	1	
Hoe Blade Fragments	2	
Cable Hook	1	
Ring	1	
Stove Leg	1	
Button	1	
Pocket Knife	1	
Brass Grommet	1	
Shot	1	
Stock Binding Strap	1	
Strap Fragments	6	
Zinc Sheeting Fragments	30	
Wire Fragments	2	
Unidentified Metal Objects	7	
Unidentified Metal Fragments	36	
STONE OBJECT		1
Gunflint	1	
LEATHER OBJECTS		5
Shoe Fragments	5	
WOODEN OBJECT		1
Cork Fragment	1	
MISCELLANEOUS OBJECTS		4
Brick Fragments	4	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		1034

Table 8 (cont'd.)

Non-Artifact Category	Total
Asphaltum	5
Bone	35
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	40

Table 9 - Cultural materials from West Stockade A-O, period 3.

Artifact Category	Sub-Total	Total
CERAMIC WARES		60
Earthenware Fragments	58	
Stoneware Fragments	2	
CERAMIC OBJECTS		20
Kaolin Pipe Fragments	20	
GLASS OBJECTS		26
Bottle Fragments	15	
Tumbler Fragment	1	
Unidentified Curved Glass Fragments	5	
Window Glass Fragments	4	
Bead	1	
METAL OBJECTS		60
Square Nails	45	
Shot	1	
Strap Fragments	4	
Unidentified Metal Objects	8	
Unidentified Metal Fragments	2	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		166

Non-Artifact Category	Total
Bone	3
Wood Fragment	1
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	4

Table 10 - Cultural materials from previously excavated portion of West Stockade A-N.

Artifact Category	Subtotal	Total
CERAMIC WARES		3
Earthenware Fragments	2	
Vitreous China Fragment	1	
GLASS OBJECTS		22
Bottle Fragments	21	
Tumbler Fragment	2	
METAL OBJECTS		54
Square Nails	30	
Wire Nails	3	
Wire	6	
Bolt and Nut	1	
Cartridges	2	
Shot	2	
Unidentified Metal Fragments	10	
MISCELLANEOUS OBJECTS		2
Brick Fragments	2	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		81

Non-Artifact Category	Total
Bone	8
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	8

Table 11 - Cultural materials from East Stockade G-H, period 1.

Artifact Category	Sub-Total	Total
CERAMIC WARES		2
Earthenware Fragments	2	
GLASS OBJECTS		9
Glass Fragments	3	
Unidentified Curved Glass Fragment	1	
Window Glass Fragments	3	
Beads	2	
METAL OBJECTS		5
Square Nails	4	
Unidentified Metal Fragment	1	
MISCELLANEOUS OBJECT		1
Paint Chip	1	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		17

Non-Artifact Category	Total
Bone	2
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	2

Table 12 - Cultural materials from Fast Stockade G-I, period 2.

Artifact Category	Sub-Total	Total
CERAMIC WARES		136
Earthenware Fragments	94	
Stoneware Fragments	42	
CERAMIC OBJECTS		55
Kaolin Pipe Fragments	55	
GLASS OBJECTS		174
Bottle Fragments	106	
Tumbler Fragments	8	
Stemmed Glassware Fragment	1	
Unidentified Curved Glass Fragments	4	
Window Glass Fragments	27	
Mirror Glass Fragment	1	
Beads	27	
METAL OBJECTS		201
Square Nails	100	
Wire Nail	1	
Staple	1	
Claw Hammer	1	
File	1	
Shot	4	
Metal Bundling Strap	2	
Hook	1	
Strap	7	
Unidentified Metal Objects	3	
Unidentified Metal Fragments	80	
STONE OBJECTS		2
Slate Tablet Fragments	2	
PLASTIC OBJECTS		2
Unidentified Plastic Objects	2	
WOODEN OBJECTS		2
Board	1	
Block	1	
MISCELLANEOUS OBJECTS		2
Brick Fragments	2	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		574

Non-Artifact Category	Total
Bone	40
Charred Wood Fragments	4
Clay Samples	3
Coal	86
Corn Cob	1
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	134

Table 13 - Cultural materials from machine dug units of East Stockade G-H.

Artifact Category	Sub-Total	Total
CERAMIC WARES		1179
Common Pottery Fragments	21	
Earthenware Fragments	940	
Stoneware Fragments	216	
Vitreous China Fragments	2	
CERAMIC OBJECTS		130
Kaolin Pipe Fragments	130	
GLASS OBJECTS		1215
Bottle Fragments	1100	
Tumbler Fragments	32	
Stemmed Glassware Fragment	1	
Unidentified Curved Glass Fragments	29	
Pressed Glass Fragment	1	
Window Glass Fragments	42	
Mirror Glass Fragment	1	
Beads	9	
METAL OBJECTS		982
Square Nails	255	
Wire Nails	160	
Bolts	4	
Nuts	2	
Washers	2	
Rivets	3	
Pintle	1	
Sheet Metal Hasps	2	
Lock Parts	4	
Stove Parts	2	
Button	1	
Container Fragments	2	
Singletree Hitch	1	
Horseshoe	1	
Files	2	
Axe Part	1	
Shovel Blades	2	
Trap Parts	2	
Ratcheting Device	1	
Shoe Last	1	
Knife Handle	1	
Cannon Primer	1	
Valve	1	
Metal Bundling Strap	28	

Table 13 (cont'd.)

Artifact Category	Sub-Total	Total
Hook	1	
Spring	1	
Ring	1	
Chain Link	1	
Wire	38	
Cable	1	
Strap	23	
Unidentified Metal Objects	28	
Unidentified Metal Fragments	403	
STONE OBJECTS		4
Gunflints	3	
Carved Stone	1	
LEATHER OBJECTS		19
Shoe Fragments	19	
RUBBER OBJECT		1
Carved Comb Handle	1	
WOOLEN OBJECT		1
Post	1	
MISCELLANEOUS OBJECTS		88
Brick Fragments	52	
Mortar Fragments	15	
Tar Paper Fragments	15	
Ceramic Insulators	3	
Fabric	3	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		3619

Non-Artifact Category	Total
Bone	217
Coal	67
Coral	1
Shell Fragments	4
Slag	3
Wood Fragments	4
Unidentified Material Fragments	3
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	299

Table 14 - Cultural materials from South Stockade N-H, including machine dug units.

Artifact Category	Subtotal	Total
CERAMIC WARES		3532
Common Pottery Fragments	53	
Earthenware Fragments	3103	
Stoneware Fragments	373	
Vitreous China Fragments	9	
Porcelain Fragments	4	
CERAMIC OBJECTS		711
Kaolin Pipe Fragments	699	
Red Clay Pipe Fragment	1	
Reed Clay Pipe Bowl Fragment	1	
Buttons	7	
Doorknob Fragments	3	
GLASS OBJECTS		2964
Bottle Fragments	2074	
Tumbler Fragments	12	
Stemmed Glassware Fragments	5	
Bottle Fragment with Etched Lettering	1	
Unidentified Curved Glass Fragments	115	
Pressed Glass Fragment	1	
Window Glass Fragments	365	
Mirror Glass Fragments	6	
Beads	383	
Melted Glass Fragment	1	
Unidentified Glass Object	1	
METAL OBJECTS		11386
Square Nails	4452	
Wire Nails	105	
Closed Eye Nails	2	
Staples	17	
Screws	11	
Bateau Bolts	7	
Bolts	53	
Bolt with Nuts	2	
Eye Bolts	6	
U-Bolt	1	
Closed Eyes	16	
Ram's Head Nut	1	
Nuts	13	
Washers	7	
Spring Washers	4	
Cotter Pin with Key	1	
Cotter Pin	1	
Rivets	19	
Unidentified Fasteners	37	

Table 14 (Cont'd.)

Artifact Category	Subtotal	Total
Pintles	4	
Hinges	14	
Hinge Hasps	2	
Anchored Eyelet	1	
Door Latches	2	
Door Bolt Latch	1	
Latch Lift	1	
Door Latch Catches	2	
Door Lock Parts	14	
Padlock Parts	4	
Stove Pipe Fragment	1	
Stove Hinge Post	1	
Fire Poker	1	
Pewter Coffee or Tea Pot Handle	1	
Knife Blade	1	
Knife Handle	1	
Spoons	2	
Handle	1	
Unidentified Utensil Fragment	1	
Cauldron Lip Fragment	1	
Container	1	
Drawer Pulls	2	
Candle Douter	1	
Brass Thimble	1	
Broach Pin	1	
Finger Rings	2	
Jewelry Setting	1	
Buttons	11	
Button Snap	1	
Buckles	2	
Belt Clasps	2	
Straight Pins	21	
U.S. Dime (1842)	1	
Lead Seals	4	
Ice Runner	1	
Runner	1	
Horseshoes	19	
Blacksmithing Tongs	24	
Blacksmithing Drifts	2	
Blacksmithing Hammers	2	
Blacksmithing Swage	1	
Punch	3	
Hotset	1	
Hotset Chisel	1	

Table 14 (Cont'd.)

Artifact Category	Subtotal	Total
Cold Chisel	1	
Chisel	1	
Files	10	
Wedges	6	
Unidentified Blacksmithing Tools	2	
Stock	229	
Ax Parts	66	
Trap Parts	201	
Plow Parts	7	
Scythe	1	
Hay Fork	1	
Singletree Hitches	3	
Singletree Hooks	4	
Turn Buckle	1	
Sledgehammer Head	1	
Pickaxe	1	
Hammer Heads	2	
Straight Peen Hammer	1	
Adze	1	
Nail Heading Tool	1	
Saw	1	
Saw Blade	1	
Saw Blade Sets	7	
Draw Knife	1	
Belaying Pins	4	
Ratcheting Devices	5	
Unidentified Hafted Implements	4	
Unidentified Tools	4	
Chain Impellers	2	
Gun Parts	7	
Rifle Parts	2	
Cartridges Cases	14	
Bullets	3	
Shot	25	
Cannon Primers	6	
Metal Bundling Strap	118	
Chain Links	68	
Swivel Ring	1	
Block-and-Tackle Sleeves	3	
Sleeve	1	
Hooks	33	
Coupling	1	
Rings	13	
Circular Iron Objects	6	

Table 14 (Cont'd.)

Artifact Category	Subtotal	Total
Bands	3	
Strap	208	
Rod	1	
Flashing	10	
Zinc Flashing	5	
Brass Strip	1	
Copper Flashing	1	
Copper Strips	2	
Copper Casting	1	
Wire	69	
Unidentified Gold Plated Object	1	
Unidentified Metal Objects	522	
Unidentified Metal Fragments	4669	
Zinc Fragments	2	
Lead Fragments	3	
STONE OBJECTS		23
Slate Pencil Fragment	1	
Slate Tablet Fragments	4	
Unidentified Slate Fragment	1	
Gunflints	7	
Graphite Crucible Fragment	1	
Pipestone Fragment	1	
Steatite Pipe Bowl	1	
Projectile Point Fragment	1	
Sharpening Stones	3	
Flaked Stone	1	
Pecked Stone Object	1	
Detritus	1	
LEATHER OBJECTS		5
Shoe Fragment	1	
Shoe Heel Fragments	3	
Unidentified Leather Fragment	1	
RUBBER OBJECTS		2
Comb Parts	2	
PLASTIC OBJECTS		3
Comb Teeth	3	
WOODEN OBJECTS		3
Stockade Posts	2	
Knife Handle	1	

Table 14 (Cont'd.)

Artifact Category	Subtotal	Total
MISCELLANEOUS OBJECTS		1082
Brick Fragments	647	
Tile Fragments	7	
Mortar Fragments	39	
Plaster Fragment	1	
Glass Insulators	7	
Paint Brush	1	
Tar Paper Fragments	10	
Marking Crayon Fragments	7	
Cigarette Wrappers	2	
Unidentified Material Fragments	4	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		19711

Non-Artifact Category	Total
Asphaltum	84
Bone	784
Cinder	1
Clay Samples	3
Clinkers	235
Coal	7605
Coke Fragments	20
Coprolites	2
Coral	53
Flint Nodule	1
Petrified Wood Fragment	1
Schist Fragments	4
Slag	3
Soil Samples	2
Wood Fragments	13
Unidentified Material Fragments	3
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	8814

Table 15 - Cultural materials from South Stockade Period 2 between point K and the southeast gate.

Artifact Category	Sub-Total	Total
CERAMIC WARES		64
Earthenware Fragments	61	
Stoneware Fragment	1	
Vitreous China Fragments	2	
CERAMIC OBJECTS		55
Kaolin Pipe Fragments	55	
GLASS OBJECTS		487
Bottle Fragments	56	
Window Glass Fragments	45	
Mirror Glass Fragment	1	
Beads	383	
Glass Ring Setting	1	
Unidentified Glass Fragment	1	
METAL OBJECTS		270
Square Nails	143	
Lock Part	1	
Blacksmithing Tool	1	
Trap Part	1	
Buttons	3	
Shot	19	
Rings	2	
Strap	7	
Unidentified Metal Fragments	93	
STONE OBJECTS		3
Slate Pencil Fragment	1	
Slate Tablet Fragments	2	
MISCELLANEOUS OBJECTS		45
Brick Fragments	34	
Tile Fragment	1	
Mortar Fragments	3	
Paint Chips	2	
Putty Fragments	5	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		924

Table 15 (cont'd.)

Non-Artifact Category	Total
Bone	15
Cinders	2
Clay Samples	18
Clinkers	1
Coal	32
Coral	1
Soil Sample	1
Slag	3
Unidentified Charred Material	1
Unidentified Organic Material	1
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	75

Table 16 - Cultural materials from South Stockade O-I, period 5.

Artifact Category	Sub-Total	Total
CERAMIC WARES		22
Earthenware Fragments	22	
CERAMIC OBJECTS		13
Kaolin Tobacco Pipe Fragments	13	
GLASS OBJECTS		103
Bottle Glass Fragments	99	
Window Glass Fragment	1	
Beads	3	
METAL OBJECTS		153
Square Nails	50	
Batcau Bolt	1	
Nut	1	
Shot	1	
Stock	9	
Strap	2	
Wire	1	
Unidentified Metal Objects	10	
Unidentified Metal Fragments	78	
STONE OBJECT		1
Gunflint	1	
WOODEN OBJECT		1
Stockade Post	1	
MISCELLANEOUS OBJECTS		8
Brick Fragments	8	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		301

Non-Artifact Category	Total
Asphaltum	1
Bone Fragments	7
Clinkers	5
Coal	74
Coral	1
Slag	1
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	89

Table 17 - Cultural materials from the southeast gate of South Stockade N-H.

Artifact Category	Sub-Total	Total
CERAMIC WARES		64
Common Pottery Fragments	2	
Earthenware Fragments	53	
Stoneware Fragments	9	
CERAMIC OBJECTS		29
Kaolin Pipe Fragments	28	
Marble	1	
GLASS OBJECTS		135
Bottle Fragments	67	
Unidentified Curved Glass Fragments	2	
Window Glass Fragments	21	
Beads	45	
METAL OBJECTS		324
Square Nails	67	
Staple	1	
Bolt	1	
Trap Part	1	
Buttons	2	
U.S. Dime (1838)	1	
Shot	2	
Chain Link	1	
Metal Bundling Strap	1	
Strap	4	
Unidentified Metal Objects	2	
Unidentified Metal Fragments	241	
MISCELLANEOUS OBJECTS		6
Brick Fragments	6	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		558

Non-Artifact Category	Total
Bone	9
Clinkers	28
Coal	30
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	67

Table 18 - Cultural materials from the southwest gate of South Stockade N-H.

Artifact Category	Sub-Total	Total
CERAMIC WARES		11
Earthenware Fragments	7	
Stoneware Fragments	4	
CERAMIC OBJECTS		10
Kaolin Pipe Fragments	10	
GLASS OBJECTS		22
Bottle Fragments	9	
Unidentified Curved Glass Fragments	2	
Window Glass Fragments	5	
Beads	6	
METAL OBJECTS		115
Square Nails	11	
Wire Nail	1	
Files	4	
Trap Part	1	
Percussion Cap	1	
Shot	2	
Wire	2	
Unidentified Metal Fragments	93	
MISCELLANEOUS OBJECTS		11
Tile Fragments	2	
Mortar Fragments	3	
Ochre Fragments	6	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		169

Non-Artifact Category	Total
Bone	4
Charred Wood Fragments	8
Clinkers	14
Coal	40
Coral	2
Slag	9
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	77

Table 19 - Cultural materials from stockade point H.

Artifact Category	Sub-Total	Total
CERAMIC OBJECTS		2
Kaolin Pipe Fragments	2	
GLASS OBJECTS		4
Bottle Fragment	1	
Window Glass Fragment	1	
Beads	2	
METAL OBJECTS		3
Bolt and Nut	1	
Unidentified Metal Fragments	2	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		9

Table 20 - Cultural materials from intrusive timbers west of stockade point H.

Artifact Category	Sub-Total	Total
CERAMIC WARES		28
Earthenware Fragments	26	
Stoneware Fragments	2	
CERAMIC OBJECTS		15
Kaolin Pipe Fragments	15	
GLASS OBJECTS		49
Bottle Fragments	34	
Window Glass Fragments	9	
Beads	6	
METAL OBJECTS		52
Square Nails	13	
Wire Nails	6	
Shot	1	
Metal Bundling Strap	1	
Strap	1	
Unidentified Metal Object	1	
Unidentified Metal Fragments	29	
STONE OBJECT		1
Milling Stone Section	1	
MISCELLANEOUS OBJECTS		7
Brick Fragments	4	
Mortar Fragments	3	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		152

Non-Artifact Category	Total
Bone	23
Clinkers	3
Coal	259
Coral	2
Shell Fragment	1
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	288

Table 21 - Cultural materials from inner West Stockade D-L.

Artifact Category	Sub-Total	Total
CERAMIC WARES		2
Earthenware Fragment	1	
Stoneware Fragment	1	
METAL OBJECTS		2
Square Nails	2	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		4

Non-Artifact Category	Total
Wood Fragments	2
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	2

Table 22 - Cultural materials from middle West Stockade C-M.

Artifact Category	Sub-Total	Total
GLASS OBJECTS		2
Bottle Glass Fragment	1	
Unidentified Curved Glass Fragment	1	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		2

Table 23 - Cultural materials from middle East Stockade F-J.

Artifact Category	Sub-Total	Total
CERAMIC WARES		10
Earthenware Fragments	10	
CERAMIC OBJECTS		2
Kaolin Pipe Fragments	2	
GLASS OBJECTS		2
Bottle Glass Fragments	2	
METAL OBJECTS		6
Square Nail	1	
Stock Bundling Strap	1	
Unidentified Fragments	4	
MISCELANEOUS OBJECTS		3
Brick Fragments	3	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		23

Non-Artifact Category	Total
Bone	4
Charcoal	15
Coal	35
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	54

Table 24 - Cultural materials from inner East Stockade E-K.

Artifact Category	Sub-Total	Total
CERAMIC WARES		12
Earthenware Fragments	9	
Stoneware Fragments	3	
CERAMIC OBJECTS		13
Kaolin Pipe Fragments	13	
GLASS OBJECTS		31
Bottle Glass Fragments	5	
Unidentified Glassware Fragment	1	
Unidentified Curved Glass Fragments	23	
Window Glass Fragments	2	
METAL OBJECTS		90
Square Nails	38	
Wire Nails	3	
Trap Posts	2	
Bullets	6	
Shot	2	
Wire	2	
Unidentified Metal Objects	15	
Unidentified Metal Fragments	22	
STONE OBJECT		1
Slate Fragment	1	
WOODEN OBJECT		1
Post	1	
MISCELLANEOUS OBJECTS		7
Brick Fragments	6	
Ceramic Insulator	1	
TOTAL NUMBER OF ARTIFACT FRAGMENTS		155

Non-Artifact Category	Total
Asphaltum	4
Bone	9
Coal	639
Wood Fragment	1
TOTAL NUMBER OF NON-ARTIFACT FRAGMENTS	653

VII - STOCKADE INTERPRETATIONS

Construction Phases

In the analytical discussion of Stockade excavations, we inferred certain associations of construction events among the various lines. Much of this rested on evidence from the southern stockade where trench intersections and terminations were readily identified. In this chapter the archeological and historical aspects of the associations are further discussed for purposes of defining the major construction phases of the stockades. While we are confident that the 1845 period stockade was reconstructed at Fort Vancouver, we still have the obligation of detailing and interpreting the archeological record that was destroyed by reconstruction.

For purposes of this discussion, we include a series of outline maps that show 5 major construction phases. Each map is a diagram of the total stockade at a given time as determined from analysis of archeological associations. The stockade, gates and kingposts of a phase are shown as heavy lines and filled circles, while those of precedent phases are shown as light lines and open circles (Figs. 56-60).

Phase I

The initial construction is best identified from South Stockade Period 1. The south line of this time was L-K which was set in a deep trench. Kingposts were found at fova intervals, but no cornerposts or pickets were identified. A gate frame one fova wide was located along the south line; its center was offset one fova east of the line centerpoint. Line L-K associated with lines D-L and E-K by trench intersections and fova intervals between corners and kingposts. Additional kingposts set at fova intervals were noted in line E-K which was discussed as the inner East Stockade (F320). Line D-L was discussed as the inner West Stockade (F501). Other than establishing point L, little exposure was made of line D-L. North wall D-E evidently existed at this time, although we have no usable information.

Thus, the initial stockade construction consisted of square D-L-K-E which was 24 1/2 fovas on a side and had a single gate in the south wall (Fig. 56). Through various lines of historical and past archeological evidence, construction of the Phase I Stockade is dated at 1829 (Hussey 1957:118-127; 1972:2) (Table 25).

Phase II

Construction at this time consisted of South Stockade Period 2,

Phase I

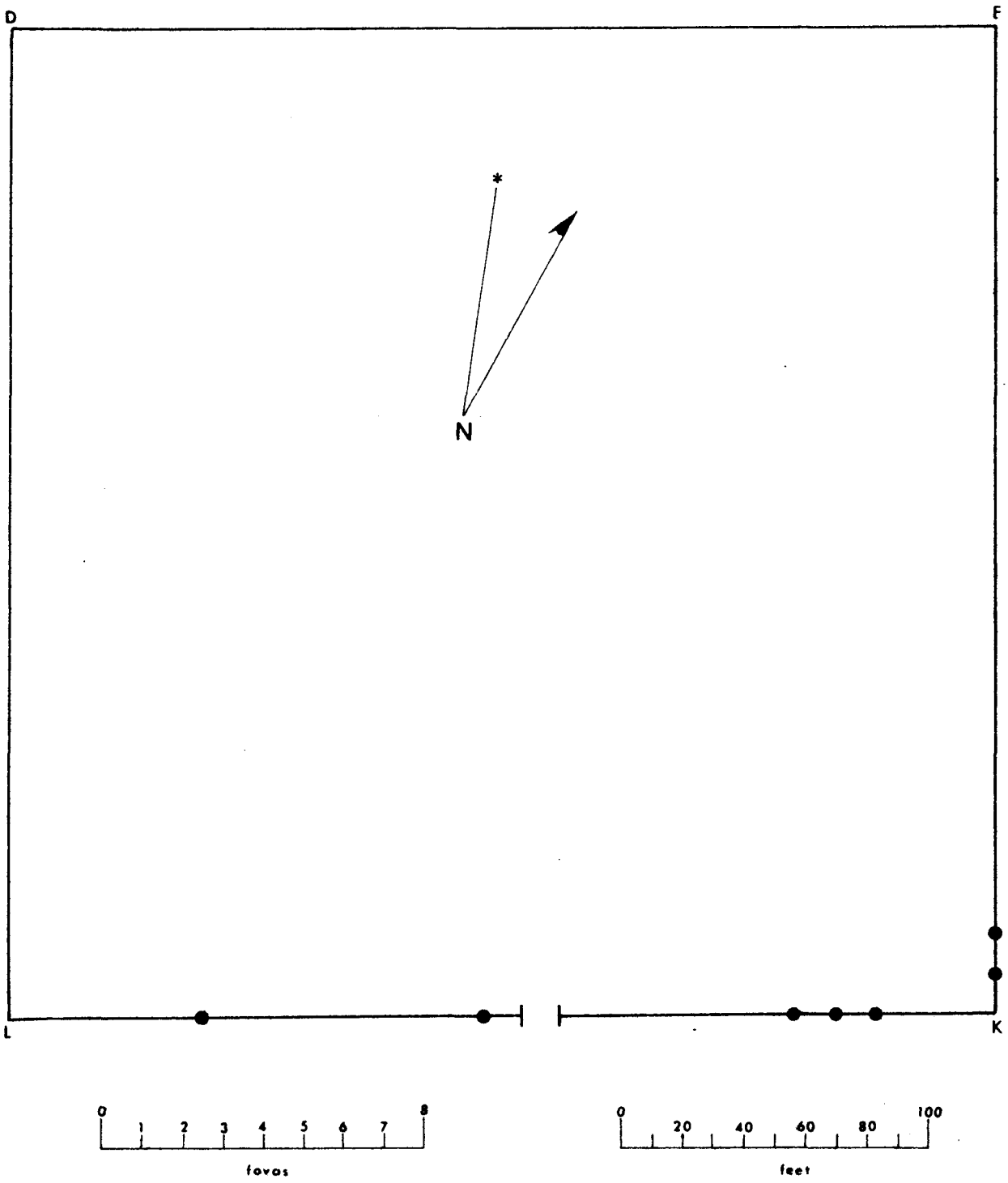


Fig. 56

middle West Stockade (F500), and the middle East Stockade (F123 and F502). These composed lines C-M, M-J and J-F. Evidently line C-F was also constructed at this time, although we have no usable information. Line associations were made by fova relationships of trench intersections, gates and kingposts. Also, the east and west wall trenches of this phase were cut at points M and J by a south trench of a later period.

Since north wall C-F must have existed at this time, we assume that the north gate was also built during Phase II. Two gates were present in the south wall. The south gate of Phase I remained unchanged during Phase II. For purposes of this report, it is also termed the southwest gate. The southeast gate of this time was a new construction. Both the north gate and the southeast gate were aligned to each other in relation to the east wall of the time. Thus, the total stockade of Phase II consisted of rectangle C-M-J-F that measured 24 1/2 by 50 5/6 fovas (Fig. 57).

The Phase II stockade was slightly more than twice the size of Phase I. Phase II can be equated with the "doubled-in-size" fort of 1834-36 by various lines of historic evidence (Hussey 1957:118-127; 1972:2-3) (Table 25). The historical interpretation of the doubled-in-size fort hypothesizes that the west wall of this time was line D-L, the same as Phase I. However, our analysis of the archeological data showed that lines C-M and M-J were associated during South Stockade Period 2 by fova relationships of kingposts on either side of point L. Moreover, the southern end of line D-L was found to have been cut by the trench of South Stockade Period 2. Thus, the west wall of the Phase II stockade was set almost 2 fovas out from that of Phase I, or more exactingly, 13 fovas from the center of the Phase I south gate.

Phase III

This was a time of sizable stockade expansion. West Stockade Period 1, South Stockade Period 3 and East Stockade Period 1 were associated by stratigraphy as well as fova relationships of kingposts and trench intersections. The full plan consisted of rectangle A-N-H-G-B which measured 24 1/2 by 56 1/2 fovas. While the gates remain unchanged, 2 new features were added: a Bastion at the northwest corner and a Bakery immediately south of the northeast corner (Fig. 58).

The sizable expansion, addition of new features and reconstruction of the south wall indicate that this was a major construction phase. Moreover, the historic evidence suggests that Phase III took place over several years. As shown by the Bastion excavation map (Fig. 1), the northwest Bastion was contemporary with west wall A-N. Otherwise, a small but critical gap would have been left in the northwest corner

Phase II

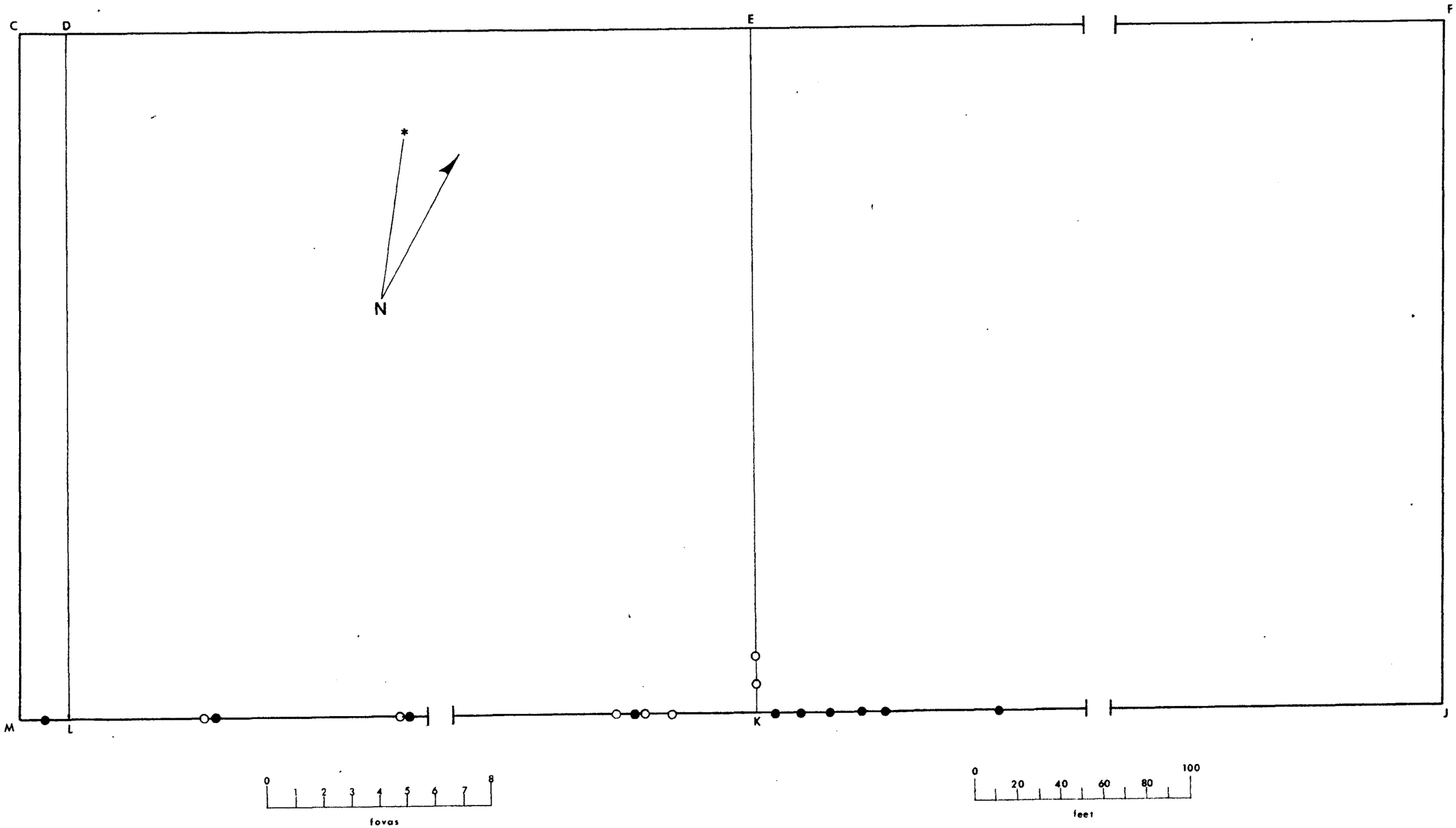


Fig. 57

Phase III

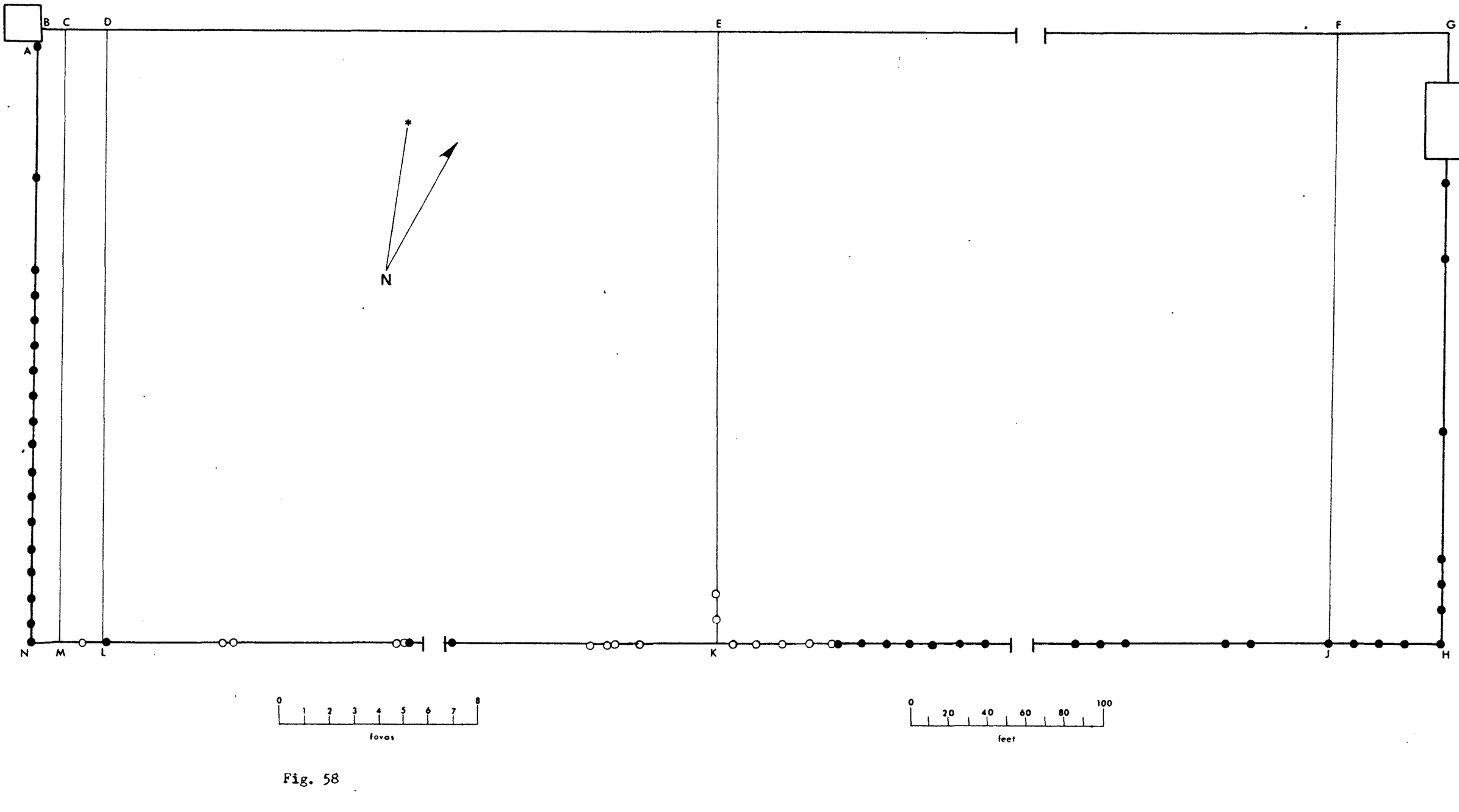


Fig. 58

of the stockade. In fact, the historical evidence clearly shows line A-N to have been completed in early February of 1845, shortly before completion of the Bastion (Hussey 1972:7-8, 36-37).

East line G-H was erected somewhat earlier, most likely at the same time as the Bakery since no evidence of stockade was found within or below the Bakery location (Hoffman and Ross 1972:12). Construction of the Bakery ovens was completed in late 1844; since the Bakery and east wall were evidently planned as a unit, it is reasonable to believe that both were built at the same time (Hussey 1972:6, 49). However, the historic evidence is not clear. Three illustrations made of Fort Vancouver in 1841 appear contradictory in depiction of the east wall.

The Emmons map of late July 1841 shows that east line G-H and the Bakery did not exist at that time. Rather, Emmons shows line F-J as the east stockade (Ibid.:Pl. III). By contrast, the Eld sketch of 1841 indicates that east wall G-H and (probably) the Bakery did exist at that time. Eld clearly shows 3 buildings in the southeast corner of the fort: a large east-west oriented structure and 2 smaller north-south oriented structures immediately east of the former (Ibid.: Pl. IV). These buildings can be confidently identified from west to east as the Indian Trade Store, the Blacksmith Shop and the adjoining Iron Store on the basis of a later map (Ibid.:Pls. VI-VIII). The point is that the Iron Store could not have been enclosed within the fort unless line G-H existed; the space would not have been available. The respective locations are well known archeologically and historically; the evidence is firm. Confirming Eld's sketch is the very similar Wilkes drawing of 1841 which shows the same building arrangement as Eld (Ibid.:Pl. LIII).

In view of the historic illustrations, it seems certain that east wall G-H was erected in 1841 after the Emmons map was made. The Bakery was probably framed into the stockade at the same time, but not finished until receipt of sufficient brick to complete the ovens. Thus, construction of Phase III stockade took place over a period of about 3 1/2 years, beginning late in 1841 at the east wall and ending in early 1845 at the west wall. Since the northern and southern walls had to be extended to meet the others, their construction dates are bracketed by those of the east and west walls (Table 25).

Phase IV

The total stockade of this time remained rectangle A-N-H-G-B plus the northwest Bastion and the Bakery. The phase consisted of the extensive repairs noted in West Stockade Period 2 and South Stockade Period 4. Unlike previous phases, construction of Phase IV did not include the

setting of kingposts. Part of the repair consisted of rebuilding the southwest gate. The new gate frame consisted of large rectangular posts set slightly inside the positions of the former gate posts, leaving a reduced clearance. By contrast, the southeast gate remained unchanged (Fig. 59).

Another possible construction of this phase was a little known Bastion that may have been located at the southeast corner of the stockade. Earlier, we referred to the timbers found in south line N-H immediately west of point H. These timbers have been interpreted as partial foundations of the southeast Bastion (Caywood 1955:8-9). Current excavations, not discussed in this report, failed to expose further foundation evidence near point H. Either the timbers did not represent the Bastion location, as suggested elsewhere (Hussey 1972: 10), or destruction of the Bastion was so complete as to make its remains not readily identifiable. In any event, the timbers could not be part of Phase III since the shared cornerpost of East Stockade Period 1 and South Stockade Period 3 at point H was stratigraphically below the timbers. Likewise, the timbers could not be part of Phase V since they were disrupted by the trench and pickets of East Stockade Period 2 (Figs. 16, 46). As a matter of elimination, the timbers may have been part of the Phase IV construction.

If the timbers actually represented the southeast Bastion, there is some historic evidence for assigning the structure to this phase, although the historic dating of Phase IV is not firm. Considerable activity took place along the south walls between 1846 and 1854. Much of this appears to be related to the weakness of the south walls in the face of winter winds (Hussey 1972:8-9). However, we have no historic reference to the extensive reconstruction seen in West Stockade Period 2. The southeast Bastion was put up in late January of 1848 (Ibid.:9-10). Whatever its appearance, we have the impression that it was a hastily built and short-lived affair. Certainly it is not shown on any known historic illustration of Fort Vancouver.

In lieu of better evidence, we believe the original archeological hypothesis regarding the Bastion foundation west of point H is tenable. We also believe that an alternate historical hypothesis regarding the south wall and Bastion (Ibid.:12) is tenable, and that the south wall of this phase was line N-H. Thus, Phase IV probably dated no later than early 1848. The flurry of construction activity at the south wall in early 1846 (Ibid.:8) probably included reconstruction of the southwest gate. Although not historically referenced, reconstruction of west wall A-N was shown archeologically to associate with the south wall reconstruction of this time. While dating is less firm than that of earlier events, Phase IV construction is probably bracketed between early 1846 and early 1848 (Table 25).

Phase IV

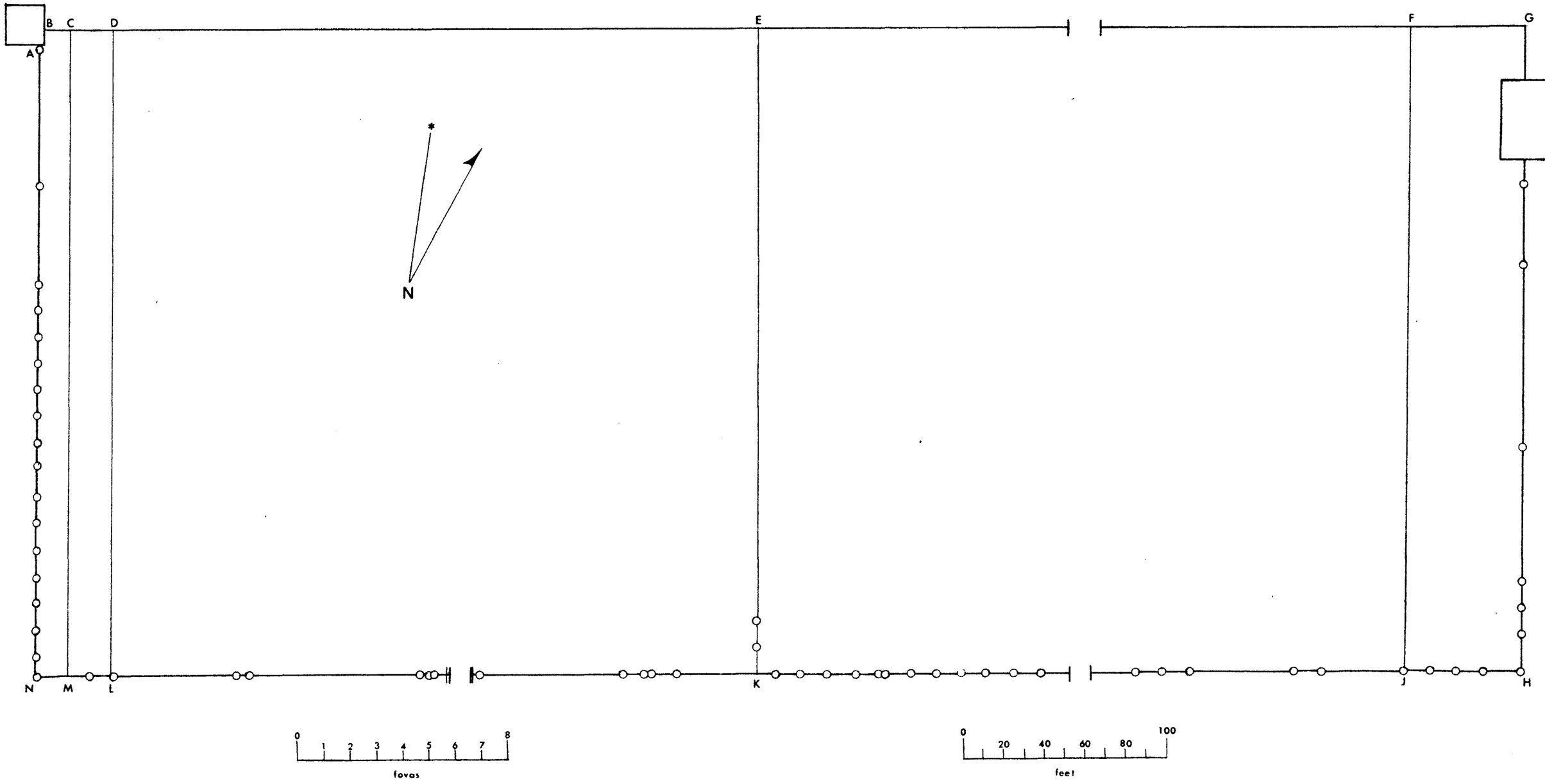


Fig. 59

Phase V

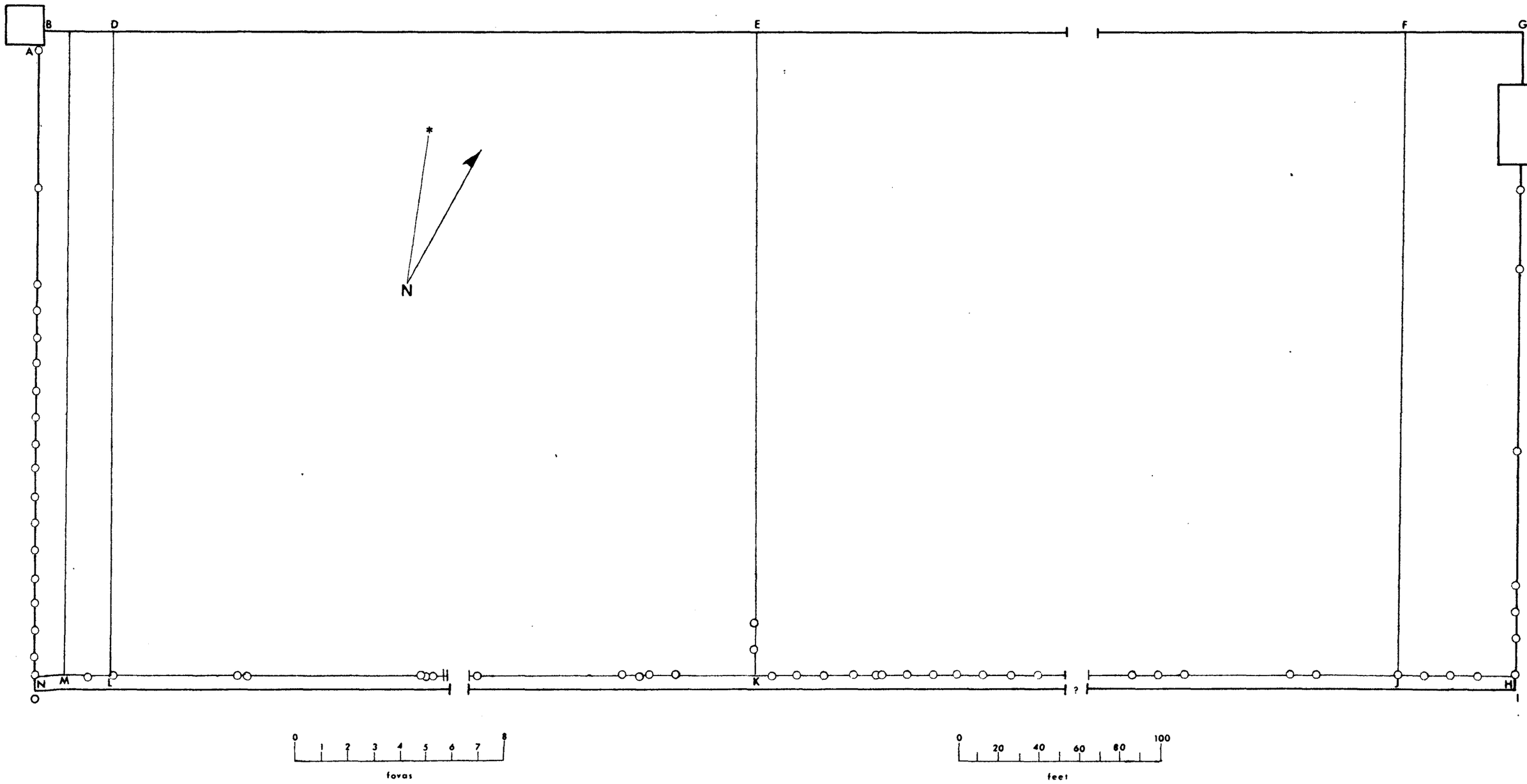


Fig. 60

Phase V

Phase V consisted of the constructive events of West Stockade Period 3, South Stockade Period 5 and East Stockade Period 2 as well as the destructive event of South Stockade Period 6. The western and eastern walls were extensively repaired and lengthened in order to meet a new southern wall.

This was the last major construction of the Fort Vancouver stockade as well as its maximum expansion. The plan was rectangle A-O-I-G-B, plus the northwest Bastion and Bakery, that enclosed about 5.5 acres (Fig. 60). The north gate remained unchanged from previous phases; however, new south gates were built for the new south wall O-I. The frame of the new southwest gate consisted of large circular posts deeply set into the ground exactly 10 ft. apart on centers (Caywood 1955:25). Existence of the new southeast gate is known only from historic illustrations; it has yet to be seen archeologically. Thus its position and appearance are not accurately known. For purposes of the Phase V diagram, we arbitrarily placed the new southeast gate immediately south of the former gate (Fig. 60).

As previously hypothesized, it was probably more efficient to dig a new trench for south wall O-I than to reuse line N-H. No kingposts were archeologically found in the lines of this phase, although such supports were apparently used during the final days of the fort (Hussey 1972:23).

Phase V construction probably took place between 1850-54 when, as one witness reported, the whole stockade was about rotted down (Ibid.:9). Analysis of the historic evidence has led to several hypotheses regarding final stockade construction. These include extensive repair, at the very least, to the south wall and/or outward movement of the south wall between 1850-54, as well as removal of the southeast Bastion by 1854 (Ibid.:10-12). These circumstances closely match the events of Phase V and suggest that the final archeological phase does date between 1850-54 (Table 25).

Table 25 - Construction sequence of Fort Vancouver stockade.

Major Event	Construction Periods	Stockade Plan	Date
Phase I	South Stockade Period 1 Inner West Stockade (F501) Inner East Stockade (F320)	square D-L-K-E	1829
Phase II	South Stockade Period 2 Middle West Stockade (F500) Middle East Stockade (F123 & 502)	rectangle C-M-J-F	1834- 1836
Phase III	South Stockade Period 3 West Stockade Period 1 East Stockade Period 1	rectangle A-N-H-G-B	1841 east 1845 west
Phase IV	South Stockade Period 4 West Stockade Period 2	rectangle A-N-H-G-B	1846- 1848
Phase V	South Stockade Period 5 West Stockade Period 3 East Stockade Period 2 South Stockade Period 6	rectangle A-O-I-G-B	1850- 1854

Construction Details

Previously we noted that the basic method of stockade construction at Fort Vancouver was simply to set posts upright within prepared trenches. This is an overly simplistic statement that ignores subtle changes in the method through time, changes that reflected the builders' attitudes towards structural soundness.

Trench depths, for instance, lend some insight into the builders' intentions regarding structural stability. While all trenches were hand dug, U-shaped excavations, some were deeper than others at various times and places. The west wall trenches of Phases I and II were virtually identical in depth (3.2 and 3.4 ft.), although located in different places. During Phase III the west trench was much deeper and varied from 3.8 to 5.4 ft. below modern surface. Occupying the same line, the west trenches of Phases IV and V were progressively shallower, rising from 4 to 3 ft. in maximum depths.

A similar situation obtained in the east wall trenches. Depth ranges of Phases I and II were 2.8 to 4.3 ft. and 3.4 to 4.4 ft. respectively. The east trench of Phase III ranged from 3.65 to 4.50 ft. deep, whereas the Phase V trench in the same line rose to 3.0 to 3.4 ft. deep. Depth ranges in the south trenches were more erratic. Phase I was a tight 4.5-4.8 ft., Phase II rose to 2.7-4.2 ft., and Phase III was 2.1-4.1 ft. deep. While our observations were minimal, the Phase IV trench seemed more restricted at 3.8-4.0 ft. During Phase V the new south trench was only 2.3-2.8 ft. deep.

These measurements were obtained from surfaces of 1972-73 rather than adjoining HBC surfaces. Yet the close correspondence of maximum trench depths within the later phases suggests little discrepancy in the proportional differences between the 2 surfaces over sizable expanses. In turn, we can say that there was a general decrease in trench depths through time, except during Phase III. The deep new east and west trenches of this phase fitted well into the overall strengthening of the stockade system during 1841-45.

Kingposts were archeologically observed during all phases except IV and V. These were important items since they offered presumptive evidence for the use of walers in strong construction. While not archeologically noted, kingposts were apparently used during the final days of the Fort (Hussey 1972:23). Kingposts were set at fova intervals and multiples thereof, usually in relation to stockade corners and gates. Most of the archeologically observed kingposts were set during Phase III (Fig. 58), again reflecting the stockade expansion and strengthening of 1841-45. However, not all stockade

periods of a phase evidenced new kingposts. This led to several hypotheses regarding the reuse of kingposts through various periods of a line. Thus, some of the kingposts set during Phase III may have remained in place to be used in the east and west walls of Phases IV and V, but not in the south wall of Phase V. This would account for the historically interpreted presence of kingposts during the latter days of the stockade.

Sixty kingposts were observed in the first 3 phases, but only 44 were measurable and 42 of these were in Phase III (Fig. 58). Total diameters ranged from 0.55 to 1.45 ft., but mean diameters varied only 0.12 ft. between posts (Table 5). Only 44% of the west wall kingposts of Phase III fell within one standard deviation of their mean diameters, implying a less than ideal selection of post sizes on the part of the builders. By contrast, 67% of the south wall kingposts for Phase III fell within one standard deviation of their mean diameters. This figure is very close to that of a 1-sigma proportion under a normal curve (Lindquist 1942:86) and implies a greater selectivity of posts by the builders. In terms of kingposts as well as trenches, Phase III was evidently a time of major construction.

Sizable quantities of picket butts and casts were found in excavation, but less than a thousand could be confidently attributed to construction periods and measured for diameters (Table 5). Unlike kingposts which were set below trench floors, pickets were set either on or above trench floors. Where associated with kingposts, pickets were attached to girths or walers that connected the kingpost above ground. However, the archeological evidence provides no means of determining whether one or more walers were used to connect the kingposts (q.v. Hussey 1972:20-23).

Overall picket diameters were extreme, ranging from 0.20 to 1.45 ft., but mean diameters were more restricted and varied from 0.45 to 0.80 ft. (Table 5). Pickets were not found in all stockade lines since those of early periods were removed or destroyed by the setting of later period pickets in the same lines. In other lines, the small number of pickets exposed prevents any statistical inference regarding selectivity of post diameters by the builders. For instance, no pickets were identified for the south wall of the Phase I stockade and the sample from the west wall was too small for statistical significance. At the east wall, 64% of the picket diameters were within one standard deviation of their mean. While this figure approaches the 1-sigma proportion of 68% for distribution under a normal curve (Lindquist 1942:85-86), the sample is rather small for confident statements of selectivity.

Too few pickets were found in the south and west walls of the Phase II stockade for statistical significance. However, 65% of the east wall picket diameters were within the 1-sigma proportion of a normal curve. This is less than a normal distribution and implies less than ideal variation in the selection of diameters. A heightened selectivity of picket diameters is implied for Phase III. At the west wall, 70% of the pickets were within the 1-sigma proportion, and 73% of the south wall pickets were within the same range. Unfortunately, no pickets were found for the east wall of Phase III.

During Phase IV, 47% of the south wall pickets were within the 1-sigma range of normal distribution and no pickets were identified for the east wall. Only 59% of the west wall pickets were within one standard deviation, although 96% fell within the 2-sigma range which has a 95.5% proportion under a normal curve. In any event, selection of Phase IV picket diameters implies a greater than ideal amount of variability.

Selection of picket diameters was more controlled in Phase V. At the west wall, 78% of the sample fell in the 1-sigma range, while 72% of the south wall pickets and 75% of the east wall pickets were within the 1-sigma proportion of a normal distribution. In terms of absolute frequencies, however, Phase V pickets generally had smaller diameters than those of previous phases (Table 5).

The stockade maps of Figs. 5-52 indicate that the builders attempted to set pickets tightly together between kingposts. This is best seen in areas where casts or earthen impressions of pickets were mapped, as opposed to the remnant wood of picket butts. For instance, casts of pickets on either side of the southwest gate were set so closely as to abut each other (Figs. 28-29). However, even remnant butts were tightly spaced, and in many cases they did abut each other. Whether pickets were barked before being set cannot be confidently said from the archeological evidence. If we assumed buried bark to rot fast or faster than buried wood, then the tight spacing of the pickets could lead to the speculation that pickets were indeed barked before setting.

With or without bark, the tight spacing provides a means of offering hypothetical statements regarding the numbers of pickets required to form a tight stockade. Using the west wall of Phase III as an example and applying the data of post diameters at the 1-sigma range, the following can be said. The space occupied by one "panel" of West Stockade Period 1 was one fova or 13 ft., less the radii of 2 kingposts. From Table 5, we see that the maximum available space left for pickets was 12.28 ft., while the minimum space was 11.76 ft. Dividing these spaces by the picket diameters of the period at the 1-sigma range,

we can say that the panel was filled with 13 to 26 pickets plus small amounts of unused space. Using mean diameters only, the same panel can be hypothesized as consisting of 2 kingposts, 18 pickets and 0.2 ft. of open space (Table 5). By the same calculations, a panel at the south wall of Phase III can be hypothesized as 2 kingposts and from 16 to 27 pickets, plus unused space amounting to less than one picket diameters. Based on mean diameters only, the same panel would consist of 2 kingposts, 20 pickets and unused space equal to 1/2 picket diameter (Table 5). The same calculations can be applied to any period where measurable kingposts and pickets were found together.

While all these methods are abstractions, they lend insight to the alternatives available to the stockade builders. As seen previously, post diameters were more carefully selected in certain periods than in others. From the statistical observations, we infer that a standard plan was used for setting kingposts, but that use of the plan for setting pickets varied on the part of the builders through time. Since availability of timber does not seem to have been a problem, as witness the number of pickets mapped, we assume the variance of the plan to have been the craftmanship of the builders.

The use of horizontal wooden pieces or runners to align picket butts in trenches was somewhat erratic through time. The trait was absent in Phase I, although the southwest corner of the stockade was braced with large stones. Runners first appeared in Phase II where a small one was noted in the west wall, and several possible runners were seen in the northern exposure of the east wall. Runners were extensively used in the west and south walls of Phase III, but they were absent in Phase IV, and used only in the east wall of Phase V.

Six gates are known for the Fort Vancouver stockade. Five have been archeologically observed, while one is known from historic evidence. We believe that the north gate was part of the Phase II construction when the northern wall was extended about 24 1/2 fovas east of its former northeast corner (Fig. 57). Since archeological investigations found only one gate in this location, we infer the north gate to have stood unchanged through Phases II to V (Fig. 60). While the shapes of the framing posts were not determined, the gate appeared to have been 12 ft. wide on centers. Horizontal wooden fragments in the area were interpreted as remains of a corduroy road through the gate (Combes 1966:4-6).

The first stockade gate was located in the south wall of Phase I. Posts of the gate frame were located 10 5/6 and 12 2/3 fovas from the stockade corners, while the gate was one fova wide on centers (Fig. 56). The framing posts were circular or rounded, about one

ft. in diameter, and set 4.5 ft. deep (Figs. 28-29). During Phases II and III, the old south gate became the southwest gate and remained unchanged as the westernmost of 2 gates in the south wall (Figs. 57-58). The southwest gate was reconstructed in Phase IV by setting new posts slightly inside the old posts so that the new frame was 5/6 fova wide on centers (Fig. 59). Unlike those of the previous frame, the new southwest gate posts were rectangular. They measured 0.85-0.90 ft. by 1.55 ft. and were set 4.35 to 4.40 ft. deep (Figs. 28-29).

The final southwest gate was built during Phase V. It was closely aligned with the former gate, but located 1/2 fova south (Caywood 1955:sheet 2 of map 2). The framing posts were circular, about one ft. in diameter, and set 10 ft. apart on centers to a depth of 4.5 ft. (ibid.:25). At this time, the former south/southwest gate position was filled with rock, possibly for use as a drainage sump.

The first southeast gate was constructed during Phase II; its eastern post was aligned with that of the northern gate, and both were set about 11 3/4 fovas west of the Phase II east wall (Fig. 57). Framing posts were rectangular and measured 0.80 by 0.85 ft., and 1.1 by 1.3 ft. They were set about 7/8 fova apart and connected below surface by a framing sill tenoned into the posts (Fig. 54). The second and final southeast gate was erected during Phase V, but it has never been seen archeologically. On the Phase V map we arbitrarily placed this southeast gate directly south of the former gate (Fig. 60); however, the historical evidence suggests that it may have been located west of this position (Hussey 1972:30).

Notes on the Fova

A careful perusal of Chapter V will show that distances described in terms of fovas do not always fall into exact multiples of 13 ft. There are variances of 0.25 to 0.75 ft. in kingpost intervals, as well as apparent errors of one to 3% in the spatial relationships of certain stockade features. We assume that whatever means were used to lay out the stockades, these means were done at ground level; e.g. the setting of stakes at measured intervals. Since posts were actually set below ground level, opportunities for error in placement are evident. Unless the exact center of a post was set at the exact ground level interval variance would occur. If the assumption of ground level planning is valid, we might say that the stockade builders were no more accurate in following their own plans than are the pole setters of a modern utility company. However, other factors may have contributed to the variances.

We have yet to resolve the true identity of the fova. It was a consistent measurement of length used in construction of the stockade that we have defined as equal to 13 ft. modern English. But the fova could be a multiple of this number, for instance 6.5 ft. or 26 ft. The concept of the fova was first recognized during analysis of structural remains of the 1841-44 Bakery (Hoffman 1971). At that time, the unnamed measurement was thought to be equal to 6.5 ft. as deduced from foundations of the buildings and ovens. The concept was ignored in the formal report of the Bakery (Hoffman and Ross 1972), since a convincing identity could not be posited for the measurement at that time. Subsequent investigation of the stockade system showed that the fova was a real factor in HBC planning and construction. The concept was fully developed by Bunton and Thomas during their excavation and analysis of the stockade remains.

Considering the French Canadian influence within 19th Century Hudson's Bay Company and Fort Vancouver specifically, identity of the fova may lie within French measurements. The linear arpent as used in Canada and Illinois is equal to 191.838 ft., modern English, and consists of 180 pieds (McDermott 1941:15-16). Thus, a pied is 1.066 ft. and 12 pieds equal 12.789 ft., or nearly one fova. Another possibility is the toise which consists of 6 pieds and is equal to 6.395 ft. (Ibid., 142) or nearly 1/2 fova.

These measurements have a certain economy of agreeing with fova measurements of stockade features. For instance, a kingpost interval of 1 1/2 fovas could be expressed as 3 toise, or a gate width of 5/6 fova could be 10 pieds. The Phase I stockade which was 24 1/2 fovas square could be measured as 294 pieds, or very close to the 300 feet square historically reported for the 1829 stockade (Hussey 1957:121). One wonders if the original plan called for a square of 50 toise. In Phase II, we found the distance from the center of the southwest gate to the southwest corner of the stockade to have been 15 fovas which is 180 pieds or one linear arpent. The Phase V stockade which we found to have the odd measurements of 26 by 56 1/2 fovas could be expressed as being 50 by 113 toise.

The evidence is purely circumstantial; neither are we aware of any historic documentation for the use of French Canadian measurements in stockade construction. Yet the close similarities between fovas, linear arpents and multiples thereof, make the hypothesis tenable: the fova most likely consists of 12 pieds.

VIII - SUMMARY AND CONCLUSIONS

The primary purpose of this report is to detail an archeological record that is largely destroyed. In doing so, we have chosen to describe the Fort Vancouver stockade system through its total time span rather than the selected period that is now reconstructed. Our methods of excavation and analysis were more comprehensive than those previously used for stockade investigations. By completely exposing original trenches we were able to derive stratigraphic information relevant to sequential stockade construction. Portions of our excavations were done with machinery prior to reconstruction; other stockade lines were destroyed by reconstruction before our investigations began. We derived only minimal information from these areas. Stockade lines still exist at Fort Vancouver; these have been lightly tested by current and past investigations. Their subsurface remains are largely intact and form a reserve of evidence for future investigations of the record.

Excavations in the northwest Bastion were brief and straightforward. The location had been previously dug and only minimal evidence was left for us. However, this evidence served to augment the historic record as to the internal appearance of the Bastion. Nothing was found to contradict the historically recorded external appearance. The Bastion was a 3-storied, heavy timber structure built in the post-in-sill style so favored at Fort Vancouver. Located at the northwest corner of the Stockade, the third-story gun deck commanded a clear view of the entire fort and adjacent areas with 8 small naval guns.

Archeological evidence indicated that the foundations of the Bastion were massive wooden puncheons set in prepared trenches below the HBC surface. While we found only 3 puncheons, there is good reason to believe that the foundations formed a plan 20-ft. square. This plan obtained for the lower 2 floors, but the gun deck was octagonal in plan and capped with a peaked roof.

Recorded soil sections showed that the ground floor of the Bastion was an earthen surface largely made of native soil. Remains of the stairway to the second floor were represented by wooden fragments and stake casts. The stairs were steeply angled, about 4 ft. wide, and oriented from south to north. They were offset west of the ground floor centerline, and anchored to the floor by a horizontal piece that was staked in place. No evidence was found of the stairway to the third floor or gun deck; however, we speculated that these stairs had the same orientation as the lower stairs. Such an arrangement would leave sufficient space to hoist guns and carriages up through the center of the Bastion.

A wooden footing found inside of the north wall was also interpreted as part of the second floor stairs, as well as presumptive evidence of a narrow gallery that paralleled the interior of the second floor. A plank cast inside of the east wall of the Bastion ground floor may have been a support for a firing step that gave access to the first floor small arms ports. It is unfortunate that areas of the Bastion floor that may have contained supportive evidence for the gallery and firing step were cut away by previous investigations. Soil sections recorded during excavation indicated that burned debris inside the Bastion differed from that outside, and led to the hypothesis of an earthen covered gun deck.

Stockade excavations produced a mass of stratigraphic and spatial evidence on building sequences and details. This evidence was assembled in analytical form and presented as a series of construction periods within various stockade lines. In turn, the periods were correlated by stratigraphic and spatial means to form major construction phases that were datable by historic evidence. Subtle changes in construction details and selection of materials were detected through the phases. Especially helpful was recognition of a standard unit of length widely used in stockade planning and construction. We described this unit as 13 ft., modern English; and termed it the fova for lack of a firmer identity. However, there is strong circumstantial evidence that the fova and its multiples can be identified as components of the French Canadian linear arpent, specifically the pied and toise.

Phase I of the Fort Vancouver stockade was a square plan 24 1/2 fovas on a side. Construction began in 1829 and featured the use of kingposts set at fova intervals that were connected aboveground by horizontal walers. A single gate one fova wide was built into the south wall.

During Phase II, the stockade was doubled in size to a rectangular plan 24 1/2 by 50 5/6 fovas. New kingposts were set for the south wall; comparable information for the other walls is incomplete. The single gate of Phase I remained unchanged in size and location during Phase II when it became the westernmost of 2 gates in the south wall. The easternmost or southeast gate was built at this time, as was the only known northern gate of Fort Vancouver. The east posts of the southeast and north gates were aligned to each other in relation to the east wall of the time, although the southeast gate was the narrower of the 2, being only 5/6 fova wide. Unlike the rounded posts of the southwest gate, the framing timbers of the southeast gate were rectangular and connected by a subsurface sill tenoned in place. Historic evidence indicates that construction of the Phase II stockade occurred between 1834-36 as part of a major fort expansion.

Phase III represented considerable strengthening of the stockade as well as continued expansion to the east and west. The full plan was a rectangle 24 1/2 by 56 1/2 fovas. A 3-story Bastion was placed at the northwest corner and a large Bakery was set into the east wall just south of the northeast corner. Kingposts were extensively used in the new east and west walls; many kingposts were replaced or added in the south wall, especially along its eastern half. The 3 gates remained unchanged in sizes and locations from the previous phase. Construction of the Phase III stockade took place over several years beginning in late 1841 at the east wall and ending in early 1845 at the west wall. Extension of the northern and southern walls undoubtedly took place during this time. While perhaps only coincidental, the elaborate strengthening of Phase III was completed immediately before Hudson's Bay Company holdings in the Oregon country fell under American jurisdiction.

The Phase IV stockade was the same plan and size as that of Phase III. Extensive repairs were made at the west and south walls, but these did not entail the setting of new kingposts. Presumably the kingposts of Phase III were largely reused in their same locations during Phase IV. The north and southeast gates remained unchanged in sizes and locations. By contrast, a new southwest gate was built. The rectangular timbers of the new gate were set immediately inside the rounded timbers of the previous frame, resulting in a slightly narrower opening. A little understood Bastion may have been built in the southeast corner at this time as a defensive complement to the northwest Bastion. However, the archeological location of the southeast Bastion is largely hypothetical. Dating of Phase IV construction is less firm than that of previous phases. Presently, we believe these events took place between very early 1846 and early 1848.

Phase V marks the final and greatest expansion of the Fort Vancouver stockade. The plan remained rectangular and 56 1/2 fovas wide. However, a new south wall was built making the fort 25 fovas deep. The final stockade enclosed about 5.5 acres. Kingposts were not archeologically observed for this phase, although they are historically believed to have been present. If so, those on the east and west walls must have been standing since Phase III. The short expansion to the south did not allow any great amount of additional building space. Limited movement of the south wall was probably a matter of construction efficiency; it was easier to dig a new stockade trench than to continue clearing the old one. The north gate probably remained unchanged in position and size during Phase V. A new southwest gate was built of rounded framing timbers immediately south of the previous southwest gates. Historically we know a new southeast gate existed at this time, but its size and location have yet to be accurately identified. The southeast Bastion, whatever its location

and appearance may have been, was probably removed at this time. However, the northwest Bastion continued to be used. The events of Phase V probably took place between 1850-54. Other than minor repairs to the pickets, the stockade system of Phase V remained intact until 1860 or slightly later. Throughout our discussion of the Fort Vancouver stockade, we have largely avoided the reasons for expansion. It is not enough to simply say that more space was required within the fort. Obviously certain kinds of space were needed at certain times for various reasons. These questions are best answered by social and economic studies of Fort Vancouver and the Hudson's Bay Company in the Pacific Northwest, studies that are well beyond the scope of this report. However, this report does provide the basis for physically delineating the various periods of expansion. In this respect the report fulfills its committments and the archeological record destroyed in the ground is preserved on paper.

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