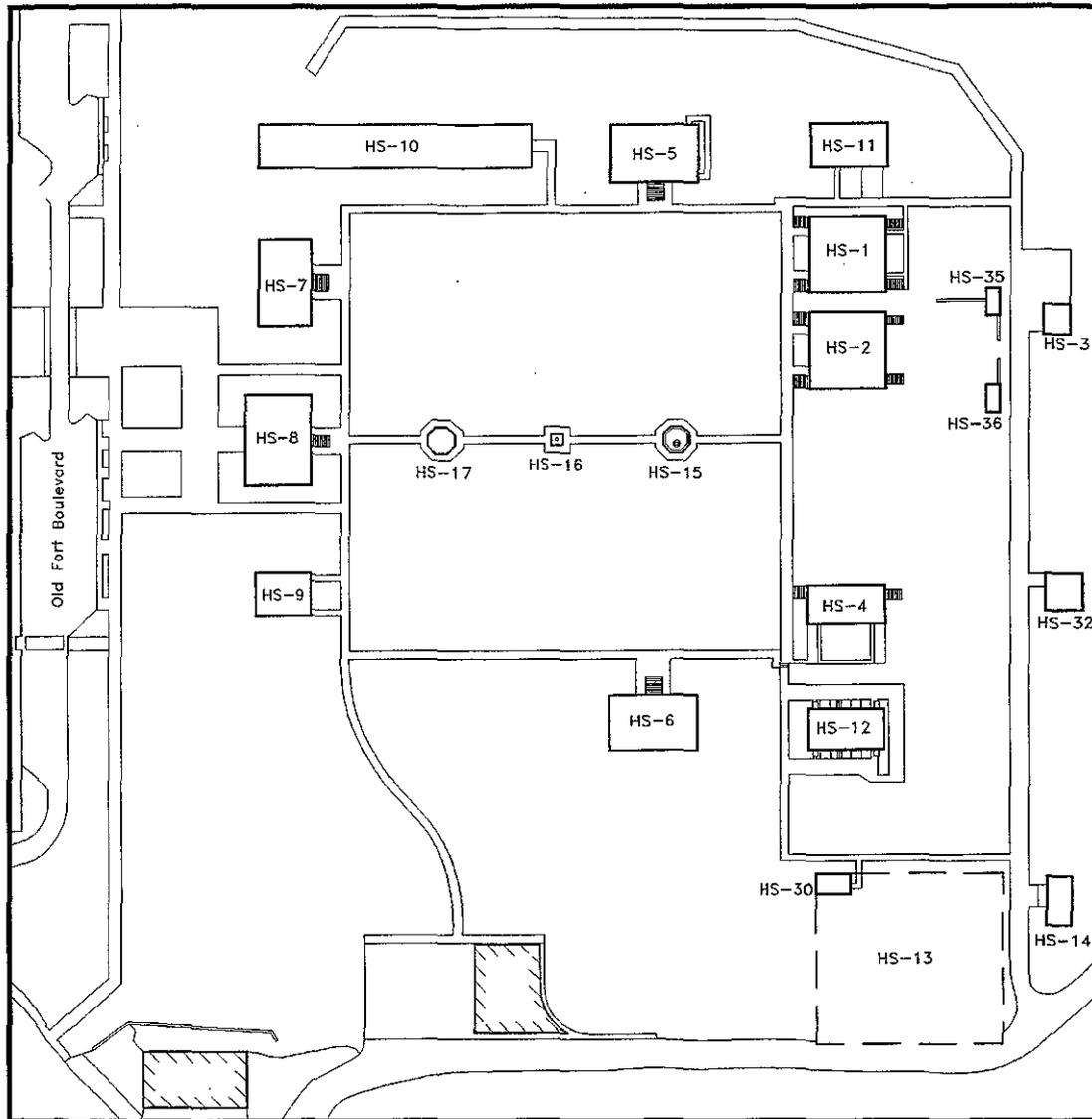


Archeological Monitoring,  
Installation of Fire Suppression System,  
Fort Scott National Historic Site,  
Bourbon County, Kansas: 1997-1998



National Park Service - Midwest Archeological Center

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Lincoln, Nebraska 68508-3873

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August 21, 1998

K3841(MWAC)

### Memorandum

To: Superintendent, Fort Scott National Historic Site

From: Manager, Midwest Archeological Center

Subject: Technical Report on work done at Fort Scott National Historic Site

Enclosed are five copies of a report entitled *Archeological Monitoring, Installation of Fire Suppression System, Fort Scott National Historic Site, Bourbon County, Kansas: 1997-1998*, by Scott Stadler [MWAC Technical Report No. 57]. The report documents the Phase II and Phase III monitoring that was conducted by the author from April 16 to July 3, 1997, from August 4 to 16, 1997, and from December 8, 1997, to January 9, 1998, at Fort Scott National Historic Site in fulfillment of the requirements of Section 106 of the Historic Preservation Act.

If you have any questions regarding this report, please contact Tom Thiessen at the Midwest Archeological Center, 402-437-5392, ext. 113.

Sincerely,

Mark J. Lynott

Enclosure

bcc:

Regional Director, Midwest Region, with 1 copy of report  
Superintendent, Midwest Support Office, with 1 copy of report  
Chief, Cultural Resources, Midwest Support Office, with 1 copy of report  
Dr. F.A. Calabrese, Associate Regional Director, Cultural Resources, with 1 copy of report  
Steven L. De Vore, Archeologist, Intermountain Support Office, with 1 copy of report  
DCA/Chief Archeologist, Archeology and Ethnography Program, Washington Office, with 2 copies of report  
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Archeological Monitoring,  
Installation of Fire Suppression System,  
Fort Scott National Historic Site,  
Bourbon County, Kansas: 1997–1998

By  
Scott Stadler

Midwest Archeological Center  
Technical Report No. 57

United States Department of the Interior  
National Park Service  
Midwest Archeological Center  
Lincoln, Nebraska

1998

This report has been reviewed against the criteria contained in 43CFR Part 7, Subpart A Section 7.18 (a) (1) and, upon recommendation of the Midwest Field Area Office and the Midwest Archeological Center, has been classified as

*Available*

Making the report available meets the criteria of 43CFR Part 7, Subpart A, Section 7.18 (a) (1).



## Abstract

From April 1997 to January 1998 trenching for the installation of a fire suppression system was undertaken at Fort Scott National Historic Site, Kansas. The excavations were monitored to determine if cultural features or artifacts were located in the areas of disturbance. Monitoring revealed historic features and artifacts relating to the military and post-military history of the fort.

## Contents

Abstract .....	i
List of Tables .....	ii
List of Figures .....	iii
Introduction .....	1
Results .....	3
Summary of Results by Segments .....	3
Remote Sensing .....	13
Soil .....	14
Conclusion .....	15
References Cited .....	17

## Tables

1. Artifacts collected during trenching .....	19
2. Features recorded during trenching .....	21

## Figures

1. Location of trench segments.....	23
2. Location of features and test units.....	24
3. Stratigraphy across north side of parade ground, north wall.....	25
4. Foundation of HS-1, west wall.....	26
5. Exterior of HS-2 foundation.....	27
6. Interior of HS-4 foundation.....	27
7. Feature 97-12, stone drain.....	28
8. Feature 97-11, stone walk.....	29
9. Stratigraphy across east side of parade ground, west wall.....	30
10. Feature 97-15, stone drain.....	31
11. Profile of Feature 97-15, stone drain.....	31
12. Feature 97-16, perimeter wall.....	32
13. Feature 97-19, stone walk.....	33
14. Soil resistivity survey of parade ground.....	34
15. Soil resistivity survey north of HS-4.....	35

## Introduction

Installation of a fire suppression system was recently undertaken at Fort Scott National Historic Site (FOSC), Fort Scott, Kansas. This required trenching for a new water line, irrigation system, and several utility lines, as well as excavation for the construction of an emergency-vehicle access road. This construction required archeological monitoring to meet requirements of Section 106 of the Historic Preservation Act. Phase I monitoring was conducted in 1996 by William J. Hunt, Jr., of the Midwest Archeological Center (Hunt 1997). This report documents Phase II and Phase III monitoring conducted by the author from April 16 to July 3, 1997, from August 4 to 16, 1997, and from December 8, 1997, to January 9, 1998. Upon completion of Phase II, both the old and the new portions of the irrigation system, as well as all buildings with a need for potable water, were connected to the new water system, and the old water main was abandoned. The focus of Phase III was to bring the water lines from the new water main into each structure for use in the new fire sprinkler system.

At various times during this project, assistance was provided by FOSC Historian Arnold Schofield and Museum Technician Alan Chilton. The interest and support of FOSC Superintendent Richard Lusardi, John Austin of the Denver Service Center, and FOSC Head of Maintenance Mike Vachon was invaluable to the successful completion of the project. John Austin was the Contracting Officer's Technical Representative (COTR) for both Phase II and Phase III of this project.

The site of FOSC has been continuously occupied since the military began construction of a fort in 1842. The army occupied the fort until 1853. In 1855 the fort buildings were sold to the public, and the area became the heart of the city of Fort Scott, which continued its expansion mainly to the south. Most of the military structures were, at various times, replaced with commercial or residential structures, which were themselves replaced in the late 1960s and early 1970s with reconstructions of the military-era structures during the formation of FOSC. Numerous remains of this cycle of construction and destruction still remain at the site as subsurface features. As a result, artifacts and features from a century and a half of military and civilian occupation are represented in the parks complex archeological record. For this reason it is often a challenge to associate a particular feature with a definite time frame.

An attempt was made to correlate cultural features discovered during monitoring with historic maps and photographs of the area. Items used for this analysis include the 1848 military plan of Fort Scott, an 1884 fire insurance map of the city of Fort Scott (Western Fire Map Publishing Company 1884), a 1967 map of the area produced by an engineer from Fort Scott (Scott 1967), and two mid-1960s aerial photographs taken before the establishment of Fort Scott as a National Historic Site.

Previous research at FOSC began with the work of the Kansas State Historical Society from 1968 to 1972. This work was reported by Reynolds (1983) and included excavations in and around structure remains to locate foundations from the military period of the fort. In 1988, MWAC Archeologist Jeffrey Richner (1988) monitored the installation of gas lines in the western part of the fort. In 1992, MWAC Archeologist Caven Clark monitored the installation of a parkwide security alarm system (Clark 1993). Clark returned in 1993 and conducted research for the Cultural Landscape Report (Clark n.d.). This mainly encompassed areas north of "Officers' Row," which consists of the three existing officers' quarters (HS-1, -2, and -4) (Figure 1). Clark (1995) returned to the site in 1995 to investigate a privy south of the Visitor Center. Then, as mentioned above, in 1996 Archeologist William J. Hunt, Jr., monitored the first phase of the installation of a fire suppression system (Hunt 1997).

The orientation of FOSC is approximately 45 degrees from magnetic north. For the purposes of this report north is considered to be the side of the fort on which Officers' Row lies. In reality this is approximately northeast.

Water line trenching was divided into 17 segments, numbered generally in the order of excavation (Figure 1). The trench for the water line averaged 1.22 m (4 ft) wide and 1.5 m (5 ft) deep. In most locations, a fine crushed limestone bedding material was used to surround the PVC pipe. Trenches for various utility lines (alarm system, communications, electrical, and irrigation) averaged 46 cm (18 in) wide and 61 cm (24 in) deep.

A road capable of supporting heavy fire-fighting vehicles was also constructed at this time. Excavations for the road were about 33 cm (13 in) deep and 7.3 m (24 ft) wide. Thirty centimeters (12 in) of road base (mixed gravel and sand) was then put down. A Grasspave system consisting of a mat of connected PVC rings approximately 5 cm (2 in) in diameter was then laid down. Next a layer of fine sand was put down. Finally, sod was put in place so the road will quickly blend in with the surrounding site. The road starts on the east side of the site, where it connects with the existing paved access road north of the recreational vehicle parking lot (Figure 1). It extends west, across the north side of the parade ground to the west side of the site. The other section of road begins behind HS-11 where it joins the current gravel access road and curves to the south. It extends behind (west of) the Post Headquarters (HS-11), the Dragoon Barracks (HS-5), and the Dragoon Stables (HS-10), at which point it curves to the east and extends south of the Infantry Barracks (HS-7) and ends at the brick walk. The road is located in Segments 1, 2, 5, 7, 10, and 11 (Figure 1). The new water line runs along the side of the road cut but will not be under the Grasspave system for ease of access in the future. A new irrigation system was put in place approximately 60 cm (2 ft) outside of the road cut.

Construction plans were slightly modified several times for reasons unrelated to cultural resources in the area. However, in the case of Segment 14 (HS-4 to HS-32) the exact path of the trench was determined by the author, with the approval of both the COTR and the construction supervisor, prior to trenching. This was done in order to minimize the disturbance of archeological features known or suspected to exist in this area. As a result, this segment is somewhat S-shaped.

All cultural features were plotted by measuring distances from either the nearest building corners or from other nearby features. Features were numbered as they were encountered, with the year preceding the feature number. For example, 97-5 is the fifth feature encountered in 1997. Most features were photographed and sketched. In some cases, however, circumstances did not permit this; so notes were made as to the description and location of the feature.

Numerous artifacts were observed but were collected only if they possessed diagnostic features (Table 1). Whiteware, porcelain, stoneware, nails, ferrous and non-ferrous metal, curved glass, flat glass, brick, and stone were all observed and noted in project documentation. Evidence of prehistoric materials was discovered in two locations during Phase III. The first is a single piece of chert debitage observed in disturbed deposits in the trench south of HS-7. The second was an incidental find of several pieces of chert debitage around the picnic area north west of the RV parking area and south of HS-6.

Two test units were excavated in the vicinity of HS-4 (Figure 2). The units were placed to determine if the trench extending from HS-4 to the Carriage House (HS-32) would disrupt any cultural features.

Numerous and mostly abandoned gas, water, and sewer pipes made of metal and ceramic were encountered in almost every location during this project. This is a testament to the long history of use the site has had.

## Results

Most of the trenching occurred in the streets formerly known as Blair Avenue, on the north side of the parade ground, and Lincoln Avenue, on the east side. These streets appear on the 1884 map and continue in the same locations on later maps until the formation of the area as a National Historic Site in the 1960s. For reporting purposes, construction trenches were divided into 17 segments (Figure 1). Each segment is discussed below.

Twenty features were discovered during monitoring (Figure 2): ten structure foundations, two concrete features, three stone wall remnants, two drain segments, two stone walks, and one lens of sand, cinders, and rock (Table 2).

### *Summary of Results by Trench Segment*

#### Segment 1

This segment lies in what used to be Blair Avenue. It includes the trench for the water line and irrigation system as well as excavations for the new road. One feature was discovered in this segment.

*Feature 97-1.* This is a 5 cm (2 in) thick, 2.44 m (8 ft) wide, lens of cinders and sand with a layer of small rocks, 2-5 cm (1-2 in) in diameter, at the bottom. It starts 9 cm (3.5 in) below the surface. No artifacts were associated with this feature. Maps and photos from 1884 and 1967 show a narrow brick road (Blair Avenue) running through this area. This feature is possibly associated with that road.

Artifacts found in the water line trench include several pieces of plain whiteware and flat glass. More artifacts surfaced during excavation for the road in this segment. They included whiteware, curved glass, wire nails, and paving bricks.

The soil in Segment 1 includes a top layer of dark silty loam, then a layer of yellowish clay followed by a dark clay loam layer, and finally, a red clay which overlays bedrock at 50 cm (19 in) below surface near the west end of this segment and slightly deeper towards the east.

#### Segment 2

Segment 2 lies in another portion of Blair Avenue. No features were located in the water line trench, irrigation trench, or the road cut. Artifacts were very scarce here. One whiteware plate base with a faint, unreadable maker's mark was collected. Only a few brick fragments and an occasional plain whiteware sherd were observed.

Soil profiles were recorded across Segments 2 and 5 in order to examine the stratigraphy across the parade ground. A top layer of dark silty loam, averaging 25 cm (10 in) thick, is followed by 7 cm (3 in) of yellowish clay (old roadbed?). Below this, a layer of heavily compacted red clay extends to bedrock. Bedrock starts at about 70 cm (27 in) below surface on the west and gradually dips down until, at the east side of the parade ground, it reaches 110 cm (43 in) (Figure 3).

#### Segment 3

This is a segment of the old Marmaton Avenue. There were no features in this segment. However, trenching did expose the foundation of HS-1. It is constructed of unmortared limestone blocks to a depth

of 95 cm (37 in) (Figure 4). This is the original 1840s foundation. Four metal or ceramic pipes were within 60 cm (2 ft) of the foundation and parallel to it.

During Phase III the floor was removed from an area beneath the stairs near the northwest corner of the building. There is about 18 inches of crawlspace between the floorboards and the ground surface. Stone and brick rubble was visible just beneath the floor boards. Some original floor joists are still present, but modern joists have been placed near each one for better support. This was most likely done during the reconstruction in the 1960s and 1970s. There is also fiberglass insulation under the floor. Mike Youngren, maintenance worker, claims to have been under the floor in HS-1 several times for repairs and other work. He states that it is the most disturbed of the original building interiors. The interior of the foundation is brick and mortar in front of the original stone. A concrete pad at least 30 cm (12 in) deep and 25 cm (10 in) wide is in place about 15 cm (6 in) from the outer footing. It may also be a remnant of the reconstruction and stabilization process the fort underwent thirty years ago. This indicates that the ground at this location under HS-1 has been severely disturbed. The trench excavated was only about 25 cm (10 in) below surface at this time due to the concrete pad temporarily delaying the excavation here.

The water line will enter the building by passing under the original limestone footings, thus preserving the original work.

There are many more artifacts on the short exterior trench than were found in the previous segment. They included whiteware, stoneware, yellowware, paving bricks, curved glass and flat glass. Two pieces of whiteware with part of an unidentified leaf design were collected.

The top 30 cm (12 in) of soil is dark silty loam. A layer of compacted sand 5 cm (2 in) thick is below the dark layer, and red clay is below that.

#### Segment 4

There were no features located in this segment. One piece of tabular limestone (flagstone?) turned up in the north end of the trench. During Phase III no other artifacts were recovered. The foundation of HS-2 is made of small limestone blocks with no mortar. The bottom of the footing is 46 cm (18 in) below surface (Figure 5). One red ceramic drain pipe 10 cm (4 in) in diameter and two ferrous pipes, either water or gas, were found running parallel to the building within 61 cm (2 ft) of the foundation. All pipes appeared to be abandoned.

The water line will enter HS-2 by passing under the original footings, thus preserving them as intact as possible.

The interior excavations that were completed in Phase III were located in an area that had been a bathroom in the 1930s. Much of the fabric (wallpaper, tiles, and plaster) from this bathroom still remains. Excavations inside the building revealed a loose brick and stone rubble layer with flat glass fragments and plaster present. Original 1840s floor joists are still present in this structure. Modern joists have been placed next to the original beams to help support the floor. Presumably this was done during the reconstruction process in the 1960s and 1970s, since no one at FOSC can recall ever removing the floor in this structure. The trench here was about 76 cm (30 in) deep.

A single whiteware sherd with a partial maker's mark reading "--E CHINA/--W.B." was collected from trenching beneath the flooring inside of HS-2. This may be the mark of the William Brownfield potteries of England. The company produced items with the "W.B." mark from 1850 until 1871 (Coysch and Henrywood 1982:62).

One fragment of a two-hole shell button was noted but not collected. A brick with the markings "St. Louis/V & F.B. Co./ Standard" was noted on the surface under the floorboards. This brick was made by the St. Louis Fire Brick and Clay Company of California circa 1935 (Gurcke 1987:302).

The top 5 cm (2 in) is dark silty loam. From 5 cm to 75 cm (30 in), there is a mottled red and dark clay. At 91 cm (36 in) it changes to a very compact dark red clay. Bedrock begins at 101 cm (40 in) below the surface.

#### Segment 5

No features and few artifacts were located in either the water line trench, irrigation trench or the road cut. A few bricks turned up in front of the site where the Officers' Quarters (HS-3), and later a civilian house, used to stand. One is marked "Pittsburg/VP & B/ Brick co" for vitrified paving and brick made by the Pittsburg Brick Company, Pittsburg, Kansas.

Soil profiles were recorded across Segments 2 and 5 in order to obtain a stratigraphic record of the north side of the parade ground (Figure 3). Soils are generally the same as Segment 2. A top layer of dark silty loam, then a layer of yellow clay (old road bed?), with red clay at the bottom of the sequence. Bedrock occurs at 105 cm (41 in) below surface.

#### Segment 6

No features were located in this segment. Plain whiteware and curved glass were the only artifacts noted in trenching outside of HS-4. The foundation of HS-4 is composed of small limestone blocks with no mortar. The bottom of the footing is 74 cm (29 in) below surface.

Trenching on the interior of HS-4 took place near the northwest corner, just south of the point where the current electrical and alarm lines enter the building. The surface beneath the floorboards was mainly stone rubble, with one modern soda can also present (Figure 6). Original floor joists still exist in this structure, but most appear to have had modern joists placed near the original ones. This was most likely done during the reconstruction process during the 1960s and 1970s. Several fragments of cut bone and two pieces of curved glass were the only artifacts noted. None were collected. The trench was approximately 76 cm (30 in) deep in this building.

The water line is to be brought into HS-4 by passing under the original footings, thus preserving them as intact as possible.

Soil consisted of a top layer of dark clay loam to 30 cm (12 in) below surface, a yellowish mottled clay 10 cm (4 in) thick, then red clay to bedrock at 75 cm (30 in).

#### Segment 7

This portion includes the water line trench for approximately the east half of the segment and the road cut and irrigation trench for the entire segment. Two features were located in this segment.

*Feature 97-12.* Discovered while excavating for the emergency vehicle access road, this is a portion of a drain or gutter (Figure 7). It has an east-west orientation and consists of vertical sides with a cap of stone. The sides are constructed of unshaped and unmortared limestone blocks. The capstones are also unshaped and unmortared limestone. The space inside the drain is about 20 cm (8 in) wide and 20 cm (8 in) high. The west end of the feature is located 20 m (66 ft) from the southeast corner and 24.1 m (79 ft) from the southwest corner of the Blacksmith/Trade Shop (HS-30). The east end of the feature is 13.3 m (43.6 ft) west of the edge of the existing asphalt access road. A 2-inch-diameter natural gas line cuts

through the majority of the feature, but approximately 1.5 m (4.9 ft) appears undisturbed and in good condition.

Although there is no evidence of such a feature on the 1848 military plan map, this may be a remnant of the military construction. Although more crudely constructed, this feature is similar in style and dimensions to a drain uncovered at Fort Larned in 1974 (Scott 1975:9-16).

The west end of the feature was excavated into a lens of shale at least 36 cm (14 in) thick. The bottom of the shale layer was not reached. After recording the feature, the capstones were placed adjacent to the south side of the feature, and the feature was filled in and covered with the same sand and gravel mixture used for the road base.

Artifacts found near the feature include a whiteware saucer base with the mark of Knowles, Taylor, Knowles of East Liverpool, Ohio, which dates from 1878 to 1885 (Gates and Ormerod 1982:118). A second whiteware vessel was made by Vodrey and Brothers from East Liverpool, Ohio and dates from 1876 to 1896 (Gates and Ormerod 1982:301). An aqua bottle base marked "W Mc C" may be the mark of William McCully & Co. from Pittsburgh, Pennsylvania. This mark dates from 1832 to 1886 (Toulouse 1972:351). An aqua bottle panel fragment held Burdock Blood Bitters made by Foster Milburn & Co. of Buffalo, New York, circa 1868 (Wilson and Wilson 1971:25). Three fragments of whiteware with partial leaf designs were also collected. Also found, but not collected were a porcelain animal figurine missing head and legs; undecorated whiteware; bottle glass; and ferrous metal. The diagnostic items seem to indicate a date of manufacture, use, and deposition slightly after the military occupation of the fort. Their presence relative to the feature could indicate that the drain predates the items above and around it. This would mean the feature may have been constructed either by the military or by civilians shortly after the sale of the fort.

*Feature 97-20.* This is a segment of stone wall that appears on the 1967 map as being at the northwest corner of Blair Avenue and Hendricks Street. It is composed of mortared limestone blocks. The feature does not appear on earlier maps, possibly since early maps do not include details of this nature. This was discovered during cutting of a drainage ditch on the north side of the new fire access road.

Artifacts found in this segment include whiteware, cut bone, stoneware, and bottle glass. Three sections of concrete guttering that were along either edge of Blair Avenue were uncovered during road cutting. They line up with an east-west orientation. One section is 5.3 m (17.4 ft) long and 17.1 m (56 ft) from the southwest corner of HS-30 and 14.5 m (47.6 ft) from the southeast corner. Another section is about 2 m (6.6 ft) west of the first, and the third section is between HS-6 and HS-12. Much of the guttering has been removed by the construction.

The soil here is composed of a dark silty loam layer 25 cm (10 in) deep, followed by a layer of gravel mixed with dark silty loam to 45 cm (18 in), and then red clay to bedrock. Bedrock is at 65 cm (26 in) below surface. The yellow clay layer that had previously signified the old road bed has been replaced by the gravel layer. The west end of Feature 97-12 was excavated into a layer of shale at least 36 cm (14 in) thick. The bottom of the layer was not reached. Little shale was seen anywhere else during the project.

#### Segment 8

During Phase II, this segment approached but did not reach the foundation of HS-6. It stopped 3.5 m (11.5 ft) north of the foundation and approximately 61 cm (24 in) west of the cistern. Phase III brought the trench the rest of the way to the building and also included interior excavations. Three features were found in this segment during Phase II (Figure 2).

*Feature 97-2.* This is a section of concrete guttering that ran along the south side of Blair Avenue. Also present but not given feature numbers are two more sections of concrete guttering that were along either side of the same street. These sections can be discussed in Segment 7. Most of the guttering was removed during construction.

*Feature 97-3.* Next to Feature 97-2 is the remnant of a stone wall. Made of unmortared limestone, the feature is 30-89 cm (12-35 in) below surface, 45 cm (18 in) wide, and in poor condition. A ceramic pipe lies 25 cm (10 in) below the foundation. The stone wall does not appear on maps and photos until 1967, possibly either because the earlier maps do not show details of this nature or because it is a recent feature.

*Feature 97-4.* A rubble-filled depression, possibly either a large trash pit or basement, is located 3.5 m (11.5 ft) north of the foundation of the Infantry Barracks (HS-6). It is 5 m (16.4 ft) north-south and appears in both sides of the trench beginning at a depth of 30 cm (12 in). The rubble extends into the floor of the trench (110 cm/3.6 ft) and is mainly limestone and brick with a multitude of recent artifacts mixed in. Most date to the mid 1900s, but one piece of flow blue whiteware (late 1800s to early 1900s [Gaston 1983:8]) was recovered. Artifacts included 1 Smirnov liquor bottle, 1 plastic potato sack (10 lbs), red plastic beads, wire nails, whiteware, curved glass, metal banding, a rubber gasket, stoneware, window glass, and plate glass. The only artifact collected was the flow blue whiteware. The 1884 and 1967 maps show a frame structure in this location, but neither one indicates the presence of a cellar or basement. Given the recent age of the artifacts, the feature is probably associated with later modifications of the structure and may have been formed as a result of the destruction of the building during the formation of the historic site.

Artifacts observed in this segment, outside of the features, included whiteware, curved glass, ferrous fragments, and stoneware, none of which was collected.

Trenching during Phase III revealed the exterior foundation of HS-6 as being concrete to a depth of at least 35 inches. No trace of original 1840s foundation was noted. The foundation was breached using a coring device that bored a 25-cm (10-in) hole in the concrete for the water line to enter the building.

Phase III interior excavations in HS-6 revealed few artifacts and no features. Several pieces of plain whiteware and a few fragments of colorless curved glass were noted but not collected.

The soil here is the typical dark silty loam overlying a gravel layer (old road bed), with red clay underneath. Bedrock is below the bottom of the trench (95 cm/37 in).

## Segment 9

Both the water line and conduit for an alarm system were placed in this trench during Phase II. There were no features located in this segment. Phase III excavations exposed part of the foundation of the Quartermaster Storehouse (HS-12). It is constructed of mortared limestone blocks. The trench did not reach the bottom of the foundation. The foundation was breached using the same coring device used on the other buildings. However, two holes were bored instead of one. The second hole is for the exit of the fire department hookup, which will be placed under the southeast stairs. These holes were bored from the inside and were approximately 25 cm (10 in) above the basement floor.

Artifacts observed and noted include ferrous fragments, whiteware, and curved glass. No artifacts were collected from this segment.

The top layer of soil is the dark silty loam seen everywhere else on the site, followed by a mottled dark and red layer blending to a very compact red clay. Bedrock was not seen in this segment.

## Segment 10

During Phase II, eight features were located in this segment (Figure 2). Seven of them are structure foundations and the last is a sidewalk. No features were located during Phase III.

*Feature 97-5.* A brick and limestone foundation. Mortared bricks appear near the top of the west side of the foundation. The rest of the foundation is mortared limestone block from 8 - 90 cm (3-35 in) below the surface and is 68 cm (27 in) wide. The 1884 map of the area shows a sheep barn in this location. The 1967 map shows a large brick structure covering the entire area. The feature may be associated with either one of these structures. It is oriented north-south but does not extend across the trench into the north wall. No artifacts were associated with this feature. It is 6.8 m (22.3 ft) from the southwest corner and 12.4 m (40.7 ft) from the southeast corner of HS-10.

*Feature 97-6.* The top 60 cm (24 in) of this limestone foundation are held together by mortar, but the bottom 50 cm (20 in) do not have mortar. The bottom section is much more jumbled than the top and possesses slightly smaller limestone blocks. The foundation is 55 cm (22 in) wide. This feature is north-south oriented but does not extend into the north wall of the trench. It is located 5.3 m (17.4 ft) east of Feature 97-5 and runs across the width of the road cut. The 1899 map shows a carriage house in this approximate location, and the 1967 map shows a large brick building covering the entire area. This feature may be associated with either of these structures.

*Feature 97-7.* A limestone foundation 20 - 95 cm (8-37 in) below surface and 50 cm (20 in) wide. It is north-south oriented and can be seen in both the north and south walls of the trench. Located 8.1 m (26.6 ft) east of Feature 97-6, it is composed of unmortared limestone blocks. It can be seen across the width of the road cut. The feature may be related to a brick structure that appears on the 1967 map. This would be the outer wall of that structure. No structures appear in this area on the earlier maps.

*Feature 97-8.* This feature lies between Features 97-6 and 97-7. It is 4.6 m (15.1 ft) east of Feature 97-6 and is a brick-capped stone foundation 50 cm (20 in) wide. The cap is mortared brick but the limestone blocks beneath have no mortar. It is north-south oriented and does appear in both walls of the trench. Feature 97-11 runs along the east side of this foundation. This could be an inner wall of the brick building that appears on the 1967 map. No structures appear on earlier maps.

*Feature 97-9.* Both the 1884 map and the 1967 map of the area show a street (Marmaton Avenue) extending north-south along the west side of the parade ground. This feature is a layer of decaying concrete that is most likely associated with the street. It is 25 cm (10 in) below the surface and is approximately 5 cm (2 in) thick and 8 m (26.2 ft) wide. It can be seen across the width of the road cut.

*Feature 97-11.* This feature was discovered during excavations for the emergency vehicle access road. It is a stone walk made of a single layer of tabular limestone with no mortar (Figure 8). The exposed portion measures 1.5 m (4.9 ft) wide (east-west) and 4.5 m (14.8 ft) long (north-south). It does extend into the south wall but may have been disrupted on the north side by a previous water line. It is located 15.1 m (49.5 ft) from the southwest corner and 10.8 m (35.4 ft) from the southeast corner of HS-10 and 18.7 m (61.4 ft) from the southwest corner of HS-7. Feature 97-8 runs the entire length of the west edge of this feature. The walk was slightly damaged by construction but otherwise appears to be in excellent condition.

The first evidence of a structure near this location appears on the 1967 map, which shows a large brick building. The eastern edge of the building may be Feature 97-8. This would place Feature 97-11 outside the structure. The 1848 plan of the fort shows what appears to be a walkway on the east side of HS-10. It appears to have terminated even with each end of HS-10. It is possible that this feature is part of a walkway that ran in front of HS-10 and was extended, perhaps after the 1848 plan was drawn. There

is no other evidence of a stone walk being constructed at this location. As a result, it very difficult to associate its construction with any time period.

Due to the shallow depth of the walk (30 cm/12 in), Steve Vachon (Acting COTR) and the construction supervisor agreed to leave the base of the road excavation approximately an inch higher in this area to preserve the feature. It was then covered with the sand and gravel mix that was used as a base for the road.

*Feature 97-13.* A north-south oriented structure foundation 70 cm (28 in) wide. It is constructed of limestone with no mortar and can be seen in both sides of the trench. A layer of gravel 10 to 15 cm (4-6 in) thick covers the feature. It appears the feature has either been disturbed or is in poor condition, as the blocks used in the feature are sagging or slumping away to either side. It is located 1.3 m (4.3 ft) west of Feature 97-14. This feature appears to be related to recent (twentieth-century) buildings. The 1884 map does show buildings in the area belonging to a furniture store, but none of them seem to be close enough to match this feature location. The 1967 map shows the Plaza Sheet Metal and Plumbing Company building in this location. The feature is most likely related to this structure.

*Feature 97-14.* This feature closely resembles 97-13. It is an unmortared limestone foundation that appears to have been disturbed. It is 70 cm (27 in) wide and located 8.5 m (27.9 ft) from the southeast corner and 16.3 m (53.5 ft) from the southwest corner of HS-7. Feature 97-13 is 1.3 m (4.4 ft) to the west. This feature also appears to be of twentieth-century construction and most likely related to the Plaza Sheet Metal and Plumbing Company building, in place by 1967.

During Phase III the foundation of HS-7 was exposed about 1 m (39 in) east of the southwest door to the building. It is a poured-concrete foundation with no evidence of the 1840s foundation visible. The foundation was breached with a 25 cm (10 in) hole for water line access.

The foundation for HS-8 was also seen during Phase III. It is concrete, with no evidence of original foundation remaining. The trench for this structure entered the building through the air conditioning room near the south west corner of the building. Interior excavations revealed several active electrical lines indicating a high degree of disturbance. The floor that was removed in this partially reconstructed building was concrete.

Artifacts were abundant in the exterior trenches in this area. Whiteware, ferrous metal, bottle glass, flat glass, stoneware, and much construction material (bricks, mortar, stone) were observed. One whiteware base and two bottles were collected. The whiteware, which may be a mug base, bears the mark of one of the various Maling holdings in England from 1800 to 1867 (Godden 1964:408-10). One of the bottles is a rectangular patent medicine bottle with "THE TARRANT CO./CHEMISTS/NEW YORK" on one panel. This bottle dates from 1906 to 1933 (Fike 1987:48). The other bottle is a round, cork stopper type bottle with only an "i" on the base and "2 oz" on the side.

The stratigraphy in this segment is a mottled dark silty loam with red clay to a depth of about 80 cm (31 in). Below that is red clay to at least 110 cm (3.6 ft). Bedrock was not observed in this area.

## Segment 11

The road cut and irrigation trench were excavated during Phase II. Short trench segments leading to HS-10, -5, and -11 were excavated in this segment in Phase III. The Phase III excavations cover most of the same area where the water line was put in place in 1996 (Hunt 1997:22). Since the trench for the irrigation system was very close (within 2 ft) to the trench dug in 1996, features in this segment that were located in 1996 were not included in this report if they were reported by Hunt (1997). Only previously unknown features are described here.

*Feature 97-10.* Located west of HS-11, this feature was found during the excavation of the road. It is a limestone foundation 13.5 m (44.3 ft) west of the HS-11. The foundation is of mortared limestone at least two courses deep. The exposed section is 2 m (6.6 ft) north-south with only 40 cm (16 in) being exposed in the west side of the road cut. About 2 m (6.6 ft) south of the foundation lie two granite slabs. The slabs are polished on one side, and each is about 90 cm (2.9 ft) long (north-south), 50 cm (20 in) wide and 7 cm (3 in) thick. The slabs are laid end to end. At least one more slab was broken by the construction, and an additional slab appears north of the foundation, possibly moved there by the construction equipment. On the west side of the slabs is a mortared limestone walk approximately 50 cm (20 in) wide and running north-south. The foundation, granite, and walk are all under 10 cm (4 in) of topsoil.

A series of buildings has stood at this location since the fort was constructed. Although none appear on the 1848 plan of the fort, records indicate that several small outbuildings built by the military may have existed in this area. The 1884 map shows a small frame building here, and the 1967 map shows what appears to be the same building but with additions. Determining which structure the feature is associated with is difficult without further historical information. A monument company once existed nearby, and indeed, there are presently two such companies within a few blocks of the site. The granite may be scavenged pieces used for decorative purposes. The retaining wall for the steep slope at the west park boundary is composed of hundreds of pieces of polished granite with varying size and shape. These are probably also remnants from the nearby monument company. One bottle base was found near the feature. It has "H.J. HEINZ Co/393/3" and the Owens Illinois maker's mark on the base. It dates from 1911 to 1929 (Zumwalt 1980:225).

The foundation for HS-10, exposed during Phase III, is made of concrete to a depth of at least 89 cm (35 in). No evidence of the original 1840s foundation was located, unless the stone rubble, found in the builders trench on both sides of the concrete foundation, is the remnant of the original foundation that was removed for the placement of the concrete foundation and then used as fill for the modern builder's trench. A 25 cm (10 in) hole was bored for entry of the water line.

The foundations for HS-5 and HS-11 are also concrete. No evidence of the original foundations was observed. Both structures had a 25-cm (10-in) diameter hole bored to allow entry of the water line.

In addition to extensive amounts of brick rubble, a substantial number of artifacts were observed in the exterior trenches of this segment. They included whiteware, stoneware, curved glass, and ferrous metal, none of which was collected. No artifacts were observed during interior excavations for either HS-5 or HS-11.

The soil in this area was only observed to a depth of 33 cm (13 in), the depth of the road cut. It was a dark silty loam throughout.

## Segment 12

The center of the trench for this segment was 2.1 m (7 ft) west of the eastern sidewalk. No numbered features were observed in this area. However, two areas of concrete reinforced with rebar were located near the center of this segment of the parade ground. These are most likely the remnants of the concrete and flagstone walk that appears on the 1967 map alongside Lincoln Avenue. The concrete was seen in the west side of the trench only. The first concrete segment is 14.4 m (47.2 ft) from the southwest corner of the HS-6. It is 1.4 m (4.6 ft) long (north-south) and 15 cm (6 in) below surface. The second section of concrete is 3.7 m (12.1 ft) south of the first and is 1.7 m (5.6 ft) long.

Artifacts observed in this area were very few. One shell button, one porcelain tea cup fragment with blue transfer design, curved glass, and several pieces of whiteware made up the entire assemblage.

Stratigraphic profiles were taken across this segment to get an idea of the stratigraphy across the east side of the parade ground (Figure 9).

### Segment 13

No features were observed in this portion of the trenching. Several limestone blocks were uncovered southeast of the Guardhouse (HS-9), but no other structural features were seen. There were very few artifacts observed here. They consisted of one piece of flow blue whiteware that dates from the mid 1800s to early 1900s (Gaston 1983:8), a few pieces of whiteware, curved glass, and ferrous metal.

### Segment 14

The purpose of this Phase II trench was to place a conduit for an electric line between HS-4 and HS-32. Three features were located in this segment. All are 1840s military-era remains.

*Feature 97-15.* A drain/gutter constructed of unmortared limestone (Figure 10). The drain runs east-west and is parallel to HS-4. The segment in the trench is 6.7 m (22 ft) north and 1.3 m (4.3 ft) west of the northwest corner of the porch of HS-4. It is 1 m (3.3 ft) wide (north-south). The north side of the drain slopes to the south, toward the center of the feature; but the south side is made of vertical limestone blocks, leaving about 50 cm (20 in) of flat limestone for the bottom of the drain (Figure 11). This is very likely an original 1840s feature. Although larger, this drain appears similar to the one found in 1993 behind HS-2 (Clark n.d.). It is possible that this is part of the same drain; it simply enlarges as it moves down slope to accommodate added runoff from the other enclosures behind Officers' Row. It is also possible that each officers' quarters enclosure had its own separate drain system.

*Feature 97-16.* Foundation of the perimeter wall that surrounded the Officers' Row area and the north portion of the fort in the 1840s (Figure 12). It is 8.5 m (2.9 ft) south of the southeast corner of HS-32. It is constructed of limestone with no mortar and is 40 cm (16 in) wide. The wall on the west side of the trench has been disturbed by the placement of a 1-inch-diameter steel pipe, now abandoned.

*Feature 97-19.* At 22 cm (8.6 in) below surface, a walkway was encountered (Figure 13). It is constructed of a single layer of tabular limestone, is 140 cm (56 in) wide, and is intact and in good condition. The edges of the walk are bounded by narrow pieces of limestone curb. This feature is extremely similar to the walkway uncovered by Clark in 1993 (Clark n.d.:10-11). That walkway went from HS-2 to an outbuilding (HS-35).

*Test Unit 1.* The purpose of this 1-m-x-1-m (3.3-ft-x-3.3-ft) test unit was to locate any remnants of the 1840s stone dividing wall that was between HS-3 and HS-4. The southeast corner of the unit is located 2 m (6.6 ft) west of the northwest corner of HS-4. The unit was excavated to 10 cm (4 in), with no evidence of the wall. Discussions with the Contracting Officer's Technical Representative and the construction supervisor led to the determination that it was possible to keep the trench to the east of this location and thus preserve any possible remains of the wall. Excavation was halted at that time. Artifacts observed in the unit include whiteware, curved and flat glass, bone, stoneware, brick, and limestone. The only artifact collected was a white clay tobacco pipe bowl fragment.

*Test Unit 2.* This 1-m-x-0.5-m (3.3-ft-x-1.6-ft) unit was excavated to determine if the 1840s walkway behind HS-4 was still in place. The southwest corner of the unit is located 14.5 m (47.6 ft) north of the northwest corner of the porch of HS-4. An extension to Test Unit 2 (1 m x 0.5 m) was excavated to the east to expose the entire width of Feature 97-19. Two artifacts were collected from this unit, a two-hole brass button with "Mode De Paris" and a small piece of whiteware with a flower design.

The soil in this segment is dark silty loam throughout, with brick fragments and gravel mixed in.

Artifacts found in this segment include whiteware, curved and flat glass, and ferrous fragments. Artifacts collected from the backdirt of the trench include one porcelain marble, a white clay tobacco pipe stem, one small medicine bottle, one unknown glass object, and one brass button that may have had an eagle design on the front indicating military origin for this item. The northern portion of this segment, outside of the perimeter wall, contained an abundance of whiteware fragments possibly indicating a trash dump.

#### Segment 15

The purpose of this segment is to place conduit for a new alarm line connecting HS-6 and HS-12. The north half of the conduit is in the same trench as the water line (Segment 9). Two features were observed south of HS-6.

*Feature 97-17.* This is a structure foundation, 10 cm (4 in) below surface, with an east-west orientation. It is composed of unmortared limestone blocks and is 46 cm (18 in) wide. The foundation is 6.3 m (20.7 ft) east of the northeast corner of HS-6. A layer of white clay 2-3 cm (0.75-1.2 in) thick covers the foundation. Both the 1884 and 1967 maps show a frame structure in this location. Reynolds indicates that this feature is a post-1863 structure (Reynolds 1983:54). This is probably the north wall of that structure. Artifacts found near the foundation were one piece of whiteware with part of a leaf design and a piece of cut bone.

*Feature 97-18.* This is a foundation that is nearly identical to Feature 97-17. Made of unmortared limestone blocks, it is 47 cm (19 in) wide and is located 3.9 m (12.8 ft) south of Feature 97-17 and is probably the south wall of the same structure. The foundation is covered in black plastic sheeting indicating that this may be a foundation recorded by Caven Clark in 1992 (Clark 1993:6) and originally recorded by Reynolds (1983:54). Reynolds indicates that this is a post-1863 feature.

The foundation of HS-6 was exposed by hand excavation during Phase II. The foundation consisted of concrete with no observed evidence of an original military-era foundation.

The trench for this segment was 46 cm (18 in) deep and exposed only the dark silty loam upper layer that can be seen across most of FOSC.

#### Segment 16

The purpose of this trench is to repair an existing irrigation line that had no source of water when the old water main was abandoned. No features or artifacts were noticed in this segment.

The soil is dark silty loam overlying red clay.

#### Segment 17

This trench had two purposes. The first was to connect the old irrigation system to the new water main, and the second was to remove the old fire hydrant that was in this corner of the parade ground. No features or artifacts were observed. The soil is dark silty loam overlying red clay. Bedrock was not observed.

## *Remote Sensing*

From April 28 to May 9, a training session, led by Steve De Vore and Robert Nickel (Nickel 1997), was held at FOSC. The purpose of the training was the demonstration of different geophysical techniques and equipment used in remote sensing at archeological sites.

During the "hands on" portions of the training, different areas of FOSC were subjected to investigation. The areas were designed to correspond in part with the areas that would be disturbed during the construction project. The results were used in an effort to locate certain features that are suspected or known to have existed. These features included a sidewalk constructed in the 1840s that led from HS-6 and the Dragoon Barracks (HS-5) to the well and several features north of HS-4. The results were very interesting and extremely helpful in determining a path for the construction that would cause the least disturbance to cultural resources.

A variety of equipment was used during the training. Maps depicting the results from the resistivity meter and magnetometer, provided by De Vore and Nickel, showed several possible cultural features in the areas to be affected by construction. One feature shows what may be the sidewalk leading across the parade ground from HS-6. The 1848 plan of Fort Scott shows the walk extending from HS-6 to the well. The remote-sensing results indicate that the walk may have actually begun south of HS-6 and led across the parade ground to the vicinity of the flagpole (Figure 14). This could not be confirmed due to the fact that the water line trench stayed within the boundary of the old street, Lincoln Avenue, which removed any trace of the sidewalk in that vicinity.

The sidewalk also appears on the 1840s plan of the fort as extending from HS-5 to the well. Resistivity results of this portion of the parade ground are less clear but may point to the same conclusion, that the walk in the 1840s actually ended near the flagpole rather than the well. This fits well with the military penchant for symmetry and balance in construction. If the walk were to end at the flagpole it would effectively divide the parade ground into quarters (with the other line connecting the magazine, flagpole, and well).

The rest of the features that the remote sensing equipment, particularly the resistivity meter, detected were north of HS-4 (Figure 15). The equipment detected the privy, which was located by Caven Clark during his excavations in 1993 (Clark n.d.:16). The resistivity meter also detected the presence of an outbuilding and a sidewalk that extended from the foot of the steps on the north side of HS-4 to the outbuilding. The results also showed a gap in the feature that was determined to be the location of an east-west irrigation line. Test Unit 2 was placed in this area to determine if the sidewalk was still present, what condition it is in, and if the walk had already been partially disturbed. Results showed that the sidewalk was still intact 22 cm (9 in) below the surface. The sidewalk was designated Feature 97-19.

The maps from the resistivity survey were used to plot the location of the trench that was to go from HS-4 to HS-32. A path was proposed by the author and approved by the COTR and the construction supervisor which would avoid the outbuilding and privy remnants but would disrupt a small section of the walk in the vicinity of Test Unit 2. The trench was to cross the walk close to where an existing irrigation line had already disturbed a portion of it, so the disturbance in the area was minimized and the necessary construction was completed.

The results from the remote-sensing training were very useful in helping the current project to avoid, or minimize disturbance to, significant cultural resources. It is therefore to be expected that in addition to the excellent results provided by this resistivity survey, future surveys will also greatly aid FOSC in further exploring cultural resources in all areas of the site.

## *Soil*

There appears to be approximately 20-30 cm (8-12 in) of black topsoil overlying the entire site. This is probably the result of the destruction and construction processes that occurred on the site in the 1960s when many of the existing buildings were torn down and the present structures were constructed. A layer of topsoil may have been brought in and placed over the entire site to enhance drainage, appearance, and vegetation growth.

The area south of HS-7 and west of HS-10 and HS-5 appears to possess heavily disturbed stratigraphy. The soil is disturbed almost to bedrock and contains much modern rubble. This is most likely due, once again, to the cycle of construction and destruction that has occurred since the military occupation of the area.

The soil across the north side of the parade ground appears to be fairly distinct and consistent (Figure 3). The top layer, beneath the sod, is 20-30 cm (8-12 in) of dark silty loam. There is more topsoil present near the center of the parade ground than at the east and west edges, possibly to assist in drainage. It is probably a recent addition and may not represent the appearance of the parade ground in 1840.

The next layer of soil is about 5-10 cm (2-4 in) of yellowish clay. This is most likely a remnant of Blair Avenue.

Historic grade (the level of soil that would have been the surface in the 1840s) has probably been disturbed by the construction and later removal of Blair Avenue and cannot be easily determined. Further investigation of the parade ground outside of Blair Avenue would be needed to locate the level of historic grade.

A layer of very compact red clay, found in all areas of the fort, is a sterile layer just above bedrock. It is 30-70 cm (12-27 in) thick.

Bedrock ranges from 70 cm (27 in) below surface at the west end of the parade ground to 110 cm (43 in) below surface at the east end.

The stratigraphy across the east side of the parade ground is slightly different than on the north side (Figure 9). Once again, there is a layer of dark silty loam 15-30 cm (6-12 in) thick. This is followed by a layer of yellowish clay 10-15 cm (4-6 in) thick which is probably a remnant of Lincoln Avenue.

Two layers of dark clay lie below the yellow clay. The upper layer has a higher gravel content and is more compacted. This may be historic grade, although part of the stratum may have been removed during construction of Lincoln Avenue. These layers are each 10-15 cm (4-6 in) thick.

The final layer is the red clay seen over the rest of the site. Bedrock is approximately 125 cm (49 in) below surface.

## Conclusion

Archeological monitoring during Phase II and Phase III of the installation of a fire suppression system at FOSC revealed 20 features that dated from the mid-19th century to mid-20th century. There are 10 structural remains, two stone walks, two stone drains, two concrete features, three stone walls, and one lens of sand and cinders.

Of the 20 features located during this project, four were determined to be of 1840s military-era construction. The first is a stone drain (97-12) located at the east side of the site near the current paved access road. Another stone drain (97-15), the perimeter wall (97-16), and a stone walk (97-19) lie north of HS-4. These features are part of the original military fort and aid in presenting a more detailed picture of the area in the 1840s.

Thirteen of the features were found to date from the late 19th to early 20th century. There are eight structure foundations, two concrete features, two stone walls, and one rubble-filled basement. The feature locations cluster into two main areas. Five features are north and east of HS-6, and seven features are south of HS-10 and HS-7. These two areas have been heavily impacted since the military occupation of the fort. The last feature is at the east end of the site near the paved access road. All thirteen features represent the post-military period of the site.

A time frame for the remaining three features could not be determined with any degree of certainty. They are a foundation, a stone walk, and a lens of sand and cinders. They represent features that would need more examination than was possible during this project.

The foundations for all of the reconstructed buildings (HS-5, -6, -7, -10, and -11) that were viewed in this project are of concrete with no evidence of original foundations observed. The foundations for the partially reconstructed building (HS-8) is also concrete. Original foundations are still in place in HS-1, -2, and -4. HS-12 appears to have much original material in the foundations, although it has been partially rebuilt. Original foundations are made of small unmortared limestone blocks.

During Phase III the foundations of the structures with concrete foundations were breached using a coring device that bored a 25-cm (10-in) hole for the entry of the water line. The foundations of HS-1, HS-2, and HS-4 should not be disturbed, since the water line will be brought into the building by passing under the footings.

A look at the stratigraphy across the parade ground is of limited value due to the disturbance caused by the construction of Blair and Lincoln Avenues. All of the trenching on the parade ground was within these former streets. There was no evidence of historic grade across the north side of the parade ground, but it may be seen about 30 cm (12 in) below the surface across the east side of the parade ground.

There appears to be a layer of dark silty clay 20-25 cm (8 to 10 in) thick over the entire site. A heavily compacted red clay layer overlies bedrock and indicates deposits that predate the military occupation of the area. Bedrock is closer to the surface (50 cm/20 in) at the west end of the site and slowly dips to the east (130 cm/51 in). Much of the soil behind HS-7, HS-10, and HS-5 is disturbed almost to bedrock. Elsewhere, the lower layers of soil appear to be undisturbed but they predate the military occupation of the site. In order to obtain a stratigraphic record that is more likely to be undisturbed, areas outside of the old streets need to be examined.

The results from the remote-sensing training held here during early stages of this project were very helpful in avoiding, or minimizing disturbance to, significant cultural resources. The excellent results

provided by the resistivity survey suggest future studies in this area could be a valuable aid in further exploring the cultural resources of FOSC.

All artifacts and records from this project are curated at Midwest Archeological Center, Lincoln, Nebraska, as MWAC Accession 714, Fort Scott Accession 384.

This project has shown that, in agreement with previous research, substantial remains that represent the 150-year history of military and civilian occupation still exist as subsurface features at FOSC. Most of the construction for this project occurred in areas that had few intact cultural deposits. The area north of HS-4 appears to contain the most undisturbed 1840s features seen during this project. Further examination of this area could reveal much about military life at historic Fort Scott. It is hoped that the results of this project will help guide future construction to those areas of FOSC where disturbance to cultural deposits would be minimized.

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Table 1. Artifacts collected during trenching.

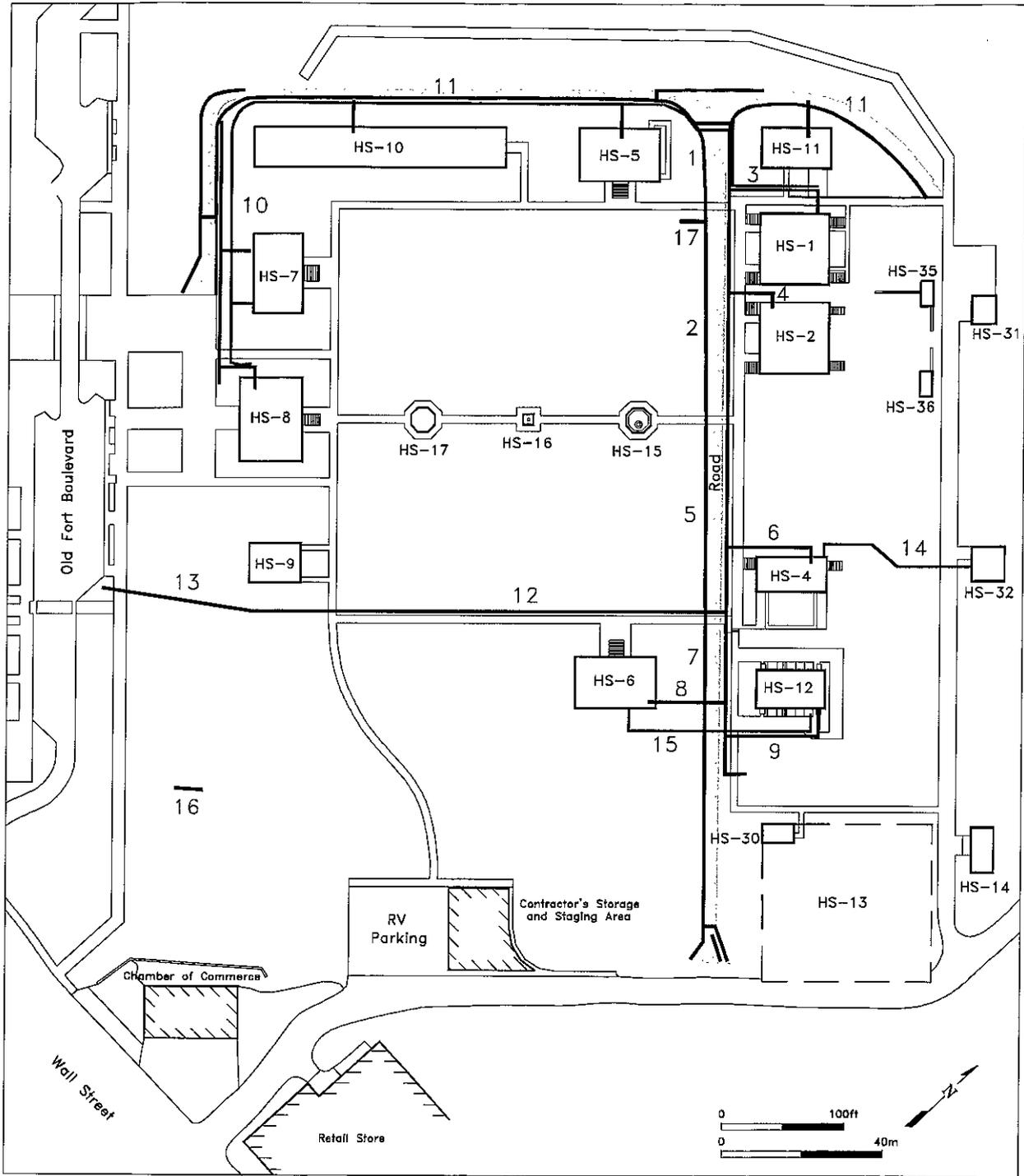
Field No.	Feature	Segment	Identification	Description
1		3	Whiteware	Partial design
2		3	Whiteware	Leaf design
3		2	Whiteware	Faint maker's mark
4		10	Bottle	Clear bottle - "The Tarrant Co./Chemists/New York" Patent Medicine Bottle (1906-1933)
5		10	Bottle	Clear bottle - "i" on base and "2 oz" on side. Cork stopper type finish.
6		10	Whiteware	Mug Base? "--AV Maling N-" on base. (1800-1867).
7		12	Shell button	2 hole, 18 lignes
8		13	Whiteware	Flow blue rim sherd (mid 1800's - early 1900's)
9		12	Porcelain	Teacup fragment with blue flower design
10	97-4	8	Whiteware	Flow blue with flower design (mid 1800's - early 1900's)
11	97-10	11	Bottle base	Owens Illinois Mark with "H.J. Heinz Co" (1911-1929)
12 a	97-12	7	Whiteware	"Ironstone China/Vodrey & Bro" (1876-1896)
12 b	97-12	7	Whiteware	Leaf design
12 c	97-12	7	Whiteware	Leaf design on both interior and exterior

Table 1. Concluded.

Field No.	Feature	Segment	Identification	Description
13 a	97-12	7	Whiteware	"Stone China/KT&K" (1878-1885)
13 b	97-12	7	Whiteware	Leaf design
14 a	97-12	7	Bottle panel	"Bur--/Bl--/--t--" Burdock Blood Bitters (ca. 1868)
14 b	97-12	7	Bottle base	"W Mc C" (1832-1886)
15	TU-1	14	Clay tobacco pipe	Bowl fragment "S1 10"
16	TU-2	14	Brass button	2 hole "Mode DE Paris" 28 Lignes
17	TU-2	14	Whiteware	Purple flower design
18		14	Porcelain marble	Has 2 dark bands and 2 red bands
19		14	Clay tobacco pipe	Stem fragment
20		14	Bottle	Patent medicine bottle "--Co/F/USA"
21		14	Glass object	Clear glass oval 20 mm x 18 mm
22		14	Brass button	Possible military button with eagle design
23	97-17	15	Whiteware	Blue transfer design
24		1	Child's coffee pot	Copper, 1 inch high
25		4	Whiteware	"--E CHINA/--W.B." (1850-1871)

Table 2. Features recorded during trenching.

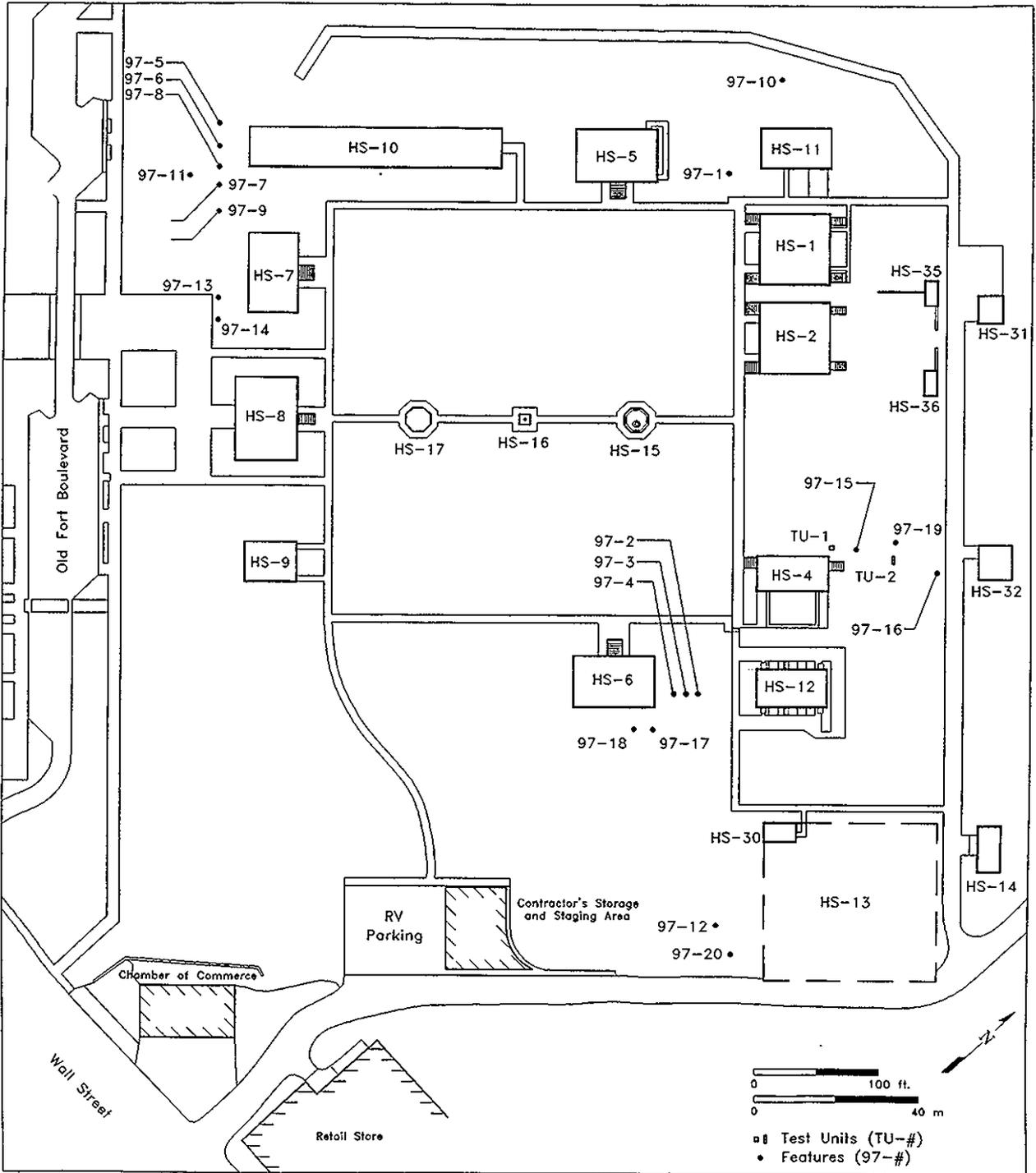
Feature	Segment	Description	Orientation	Location
97-1	1	Lens of sand and cinders	—	SE of HS-11
97-2	8	Concrete gutter	E-W	14 m N of HS-6
97-3	8	Stone wall	E-W	0.5 m S of 97-2
97-4	8	Rubble-filled depression	—	3.5 m S of HS-6
97-5	10	Brick & limestone foundation	N-S	6.5 m SW of HS-10
97-6	10	Limestone foundation	N-S	5.3 m E of 97-5
97-7	10	Limestone foundation	N-S	8.1 m E of 97-6
97-8	10	Brick & limestone foundation	N-S	4.8 m E of 97-6
97-9	10	Concrete	—	SE of HS-10
97-10	11	Limestone foundation	—	13.3 m W of HS-11
97-11	10	Limestone walk	N-S	Along E side of 97-8
97-12	7	Limestone drain	E-W	20 m SE of HS-30
97-13	10	Limestone foundation	N-S	Trench S of HS-7
97-14	10	Limestone foundation	N-S	1.3 m E of 97-13
97-15	14	Limestone drain	E-W	6.7 m N, 1.3 m W of HS-4
97-16	14	Perimeter wall	E-W	5.8 m E of HS-32
97-17	15	Limestone foundation	E-W	6.3 m E of HS-6
97-18	15	Limestone foundation	E-W	3.9 m S of 97-17
97-19	14	Limestone walk	N-S	TU-2
97-20	7	Stone wall	E-W	ENE of 97-12



- |                         |                                     |                       |
|-------------------------|-------------------------------------|-----------------------|
| HS-1 Officers' Quarters | HS-9 Guardhouse                     | HS-16 Flagpole        |
| HS-2 Officers' Quarters | HS-10 Dragoon Stables               | HS-17 Magazine        |
| HS-4 Officers' Quarters | HS-11 Ordnance & Post HQ            | HS-30 Blacksmith Shop |
| HS-5 Dragoon Barracks   | HS-12 Quartermaster Storehouse      | HS-31 Carriage House  |
| HS-6 Infantry Barracks  | HS-13 Quartermaster Quadrangle Site | HS-32 Carriage House  |
| HS-7 Infantry Barracks  | HS-14 Post Bakery                   | HS-35 Smokehouse      |
| HS-8 Hospital           | HS-15 Wall Canopy                   | HS-36 Smokehouse      |

Water Line   
 Utilities Irrigation

Figure 1. Location of trench segments (1-17).



HS-1 Officers' Quarters  
 HS-2 Officers' Quarters  
 HS-4 Officers' Quarters  
 HS-5 Dragoon Barracks  
 HS-6 Infantry Barracks  
 HS-7 Infantry Barracks  
 HS-8 Hospital

HS-9 Guardhouse  
 HS-10 Dragoon Stables  
 HS-11 Ordnance & Post HQ  
 HS-12 Quartermaster Storehouse  
 HS-13 Quartermaster Quadrangle Site  
 HS-14 Post Bakery  
 HS-15 Well Canopy

HS-16 Flagpole  
 HS-17 Magazine  
 HS-30 Blacksmith Shop  
 HS-31 Carriage House  
 HS-32 Carriage House  
 HS-35 Smokehouse  
 HS-36 Smokehouse

Figure 2. Location of features and test units.

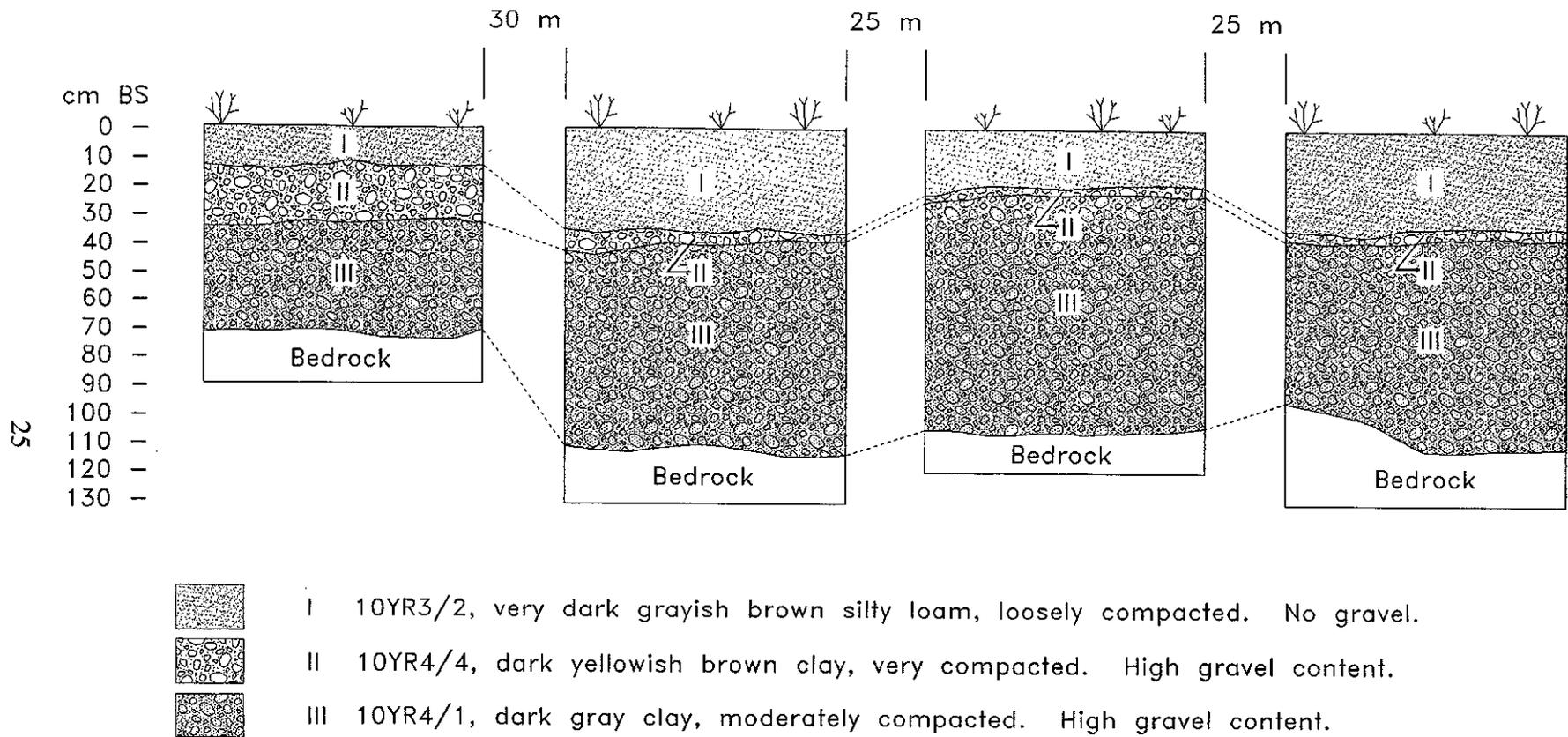


Figure 3. Stratigraphy across north side of parade ground, north wall.

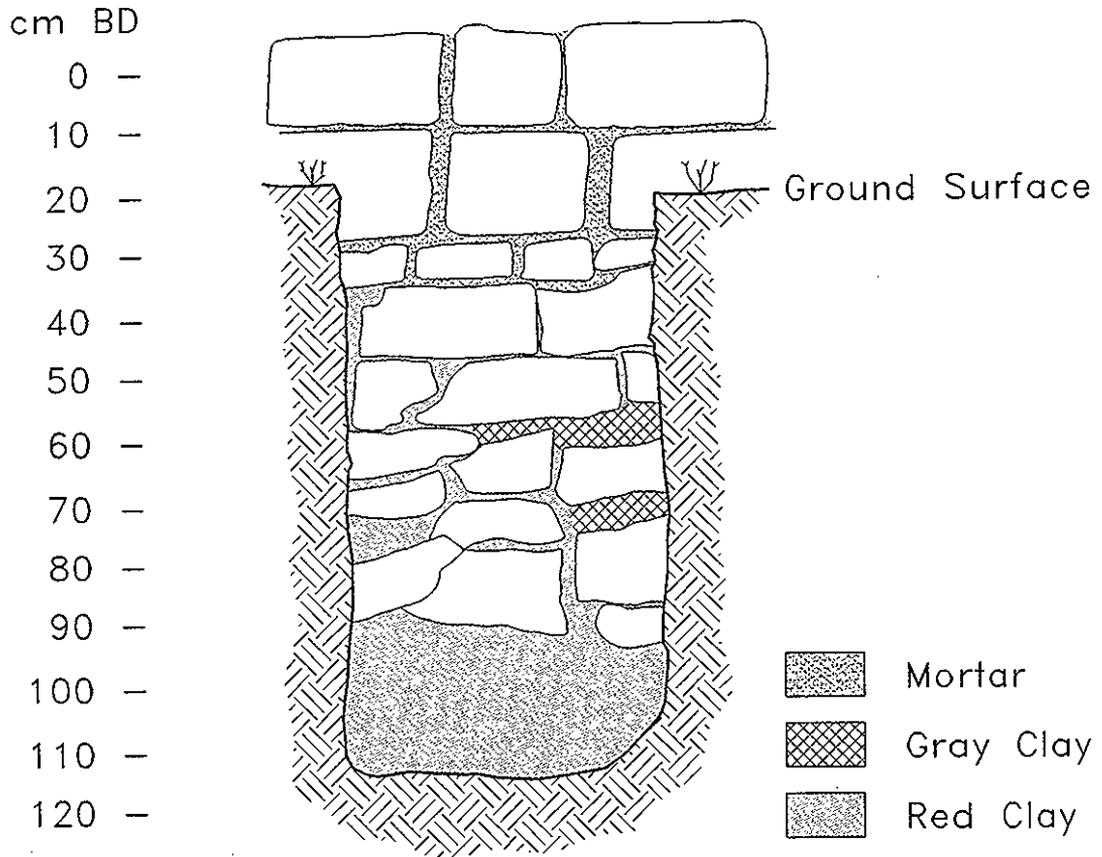


Figure 4. Foundation of HS-1, west wall.

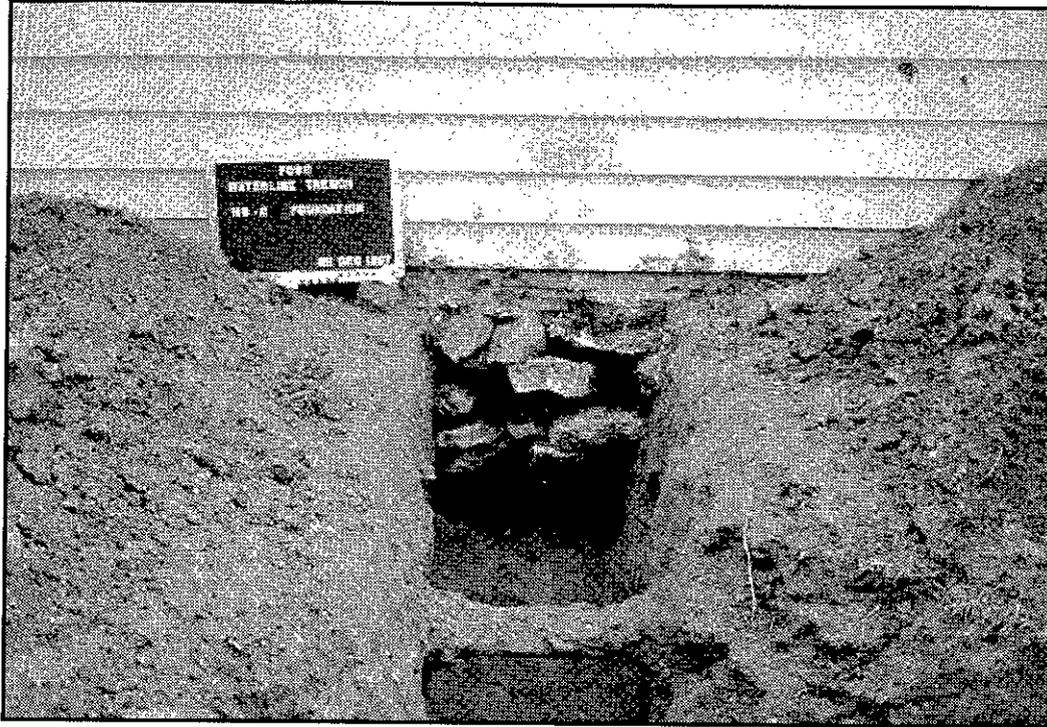


Figure 5. Exterior of HS-2 foundation.

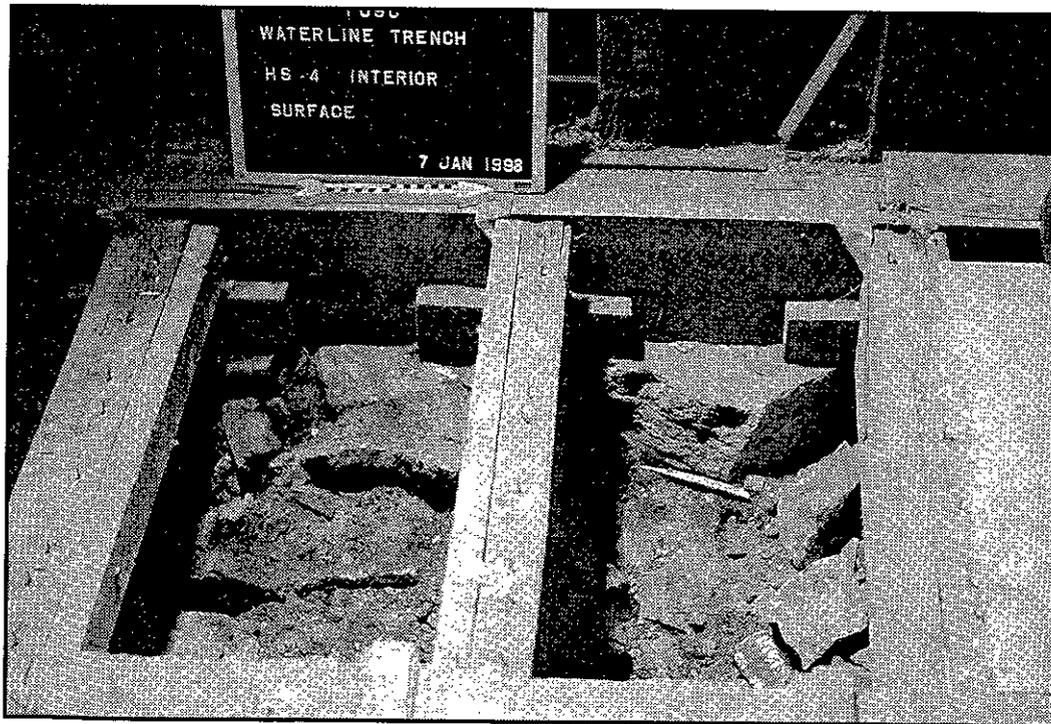


Figure 6. Interior of HS-4 foundation.



Figure 7. Feature 97-12, stone drain.

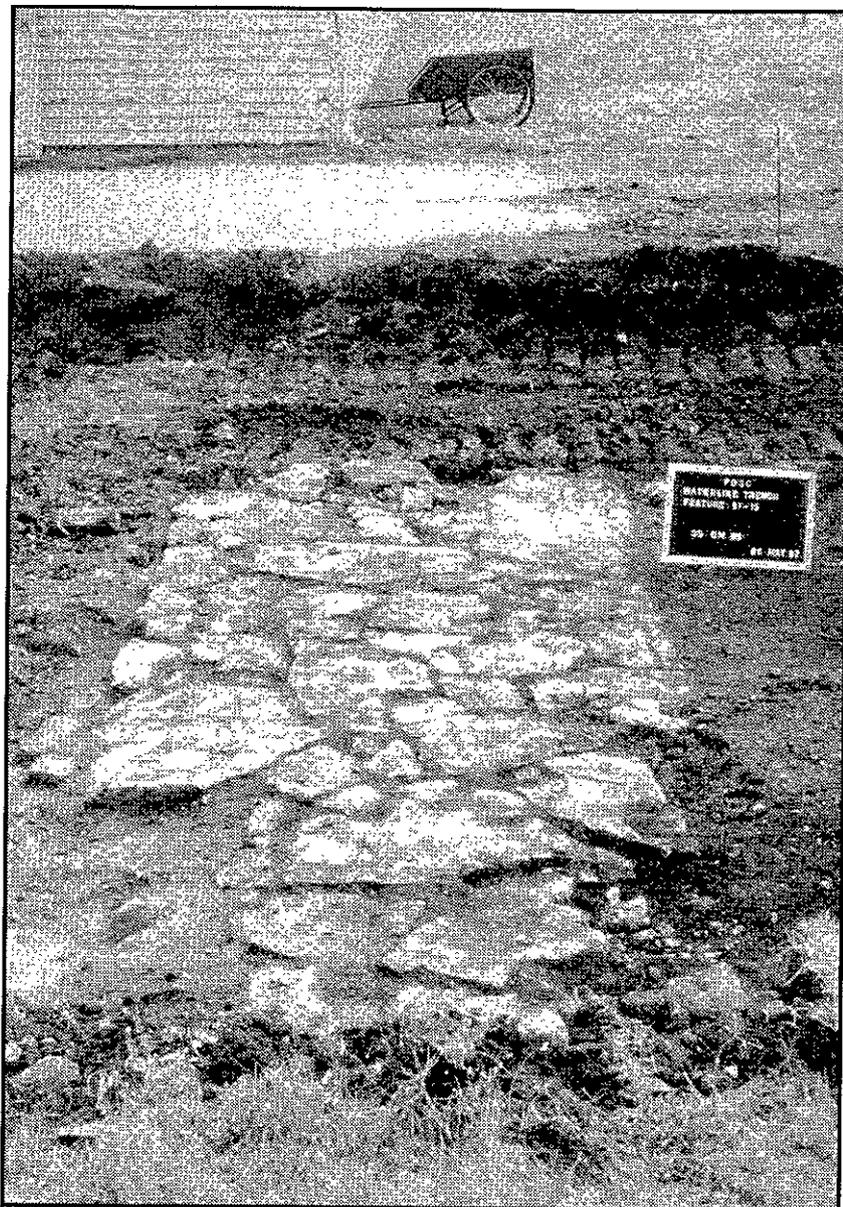


Figure 8. Feature 97-11, stone walk. The feature number that appears on the menu board is incorrect.





Figure 10. Feature 97-15, stone drain.

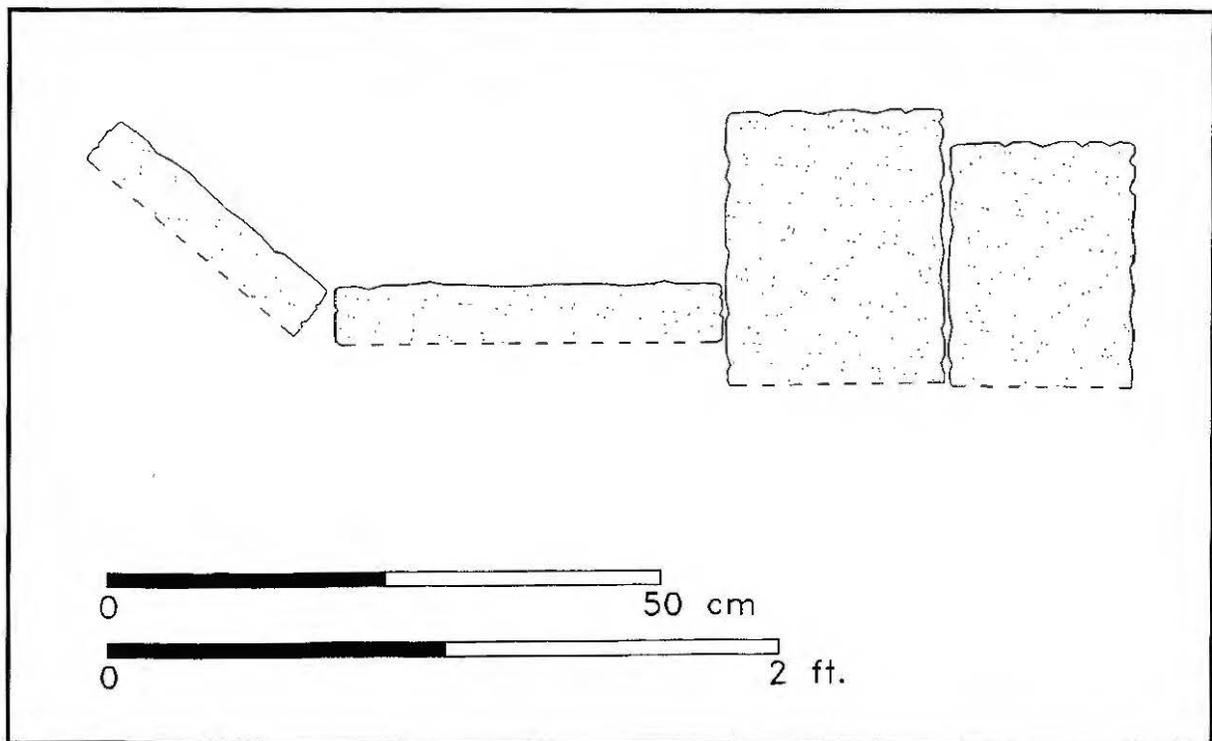


Figure 11. Profile of Feature 97-15, stone drain.

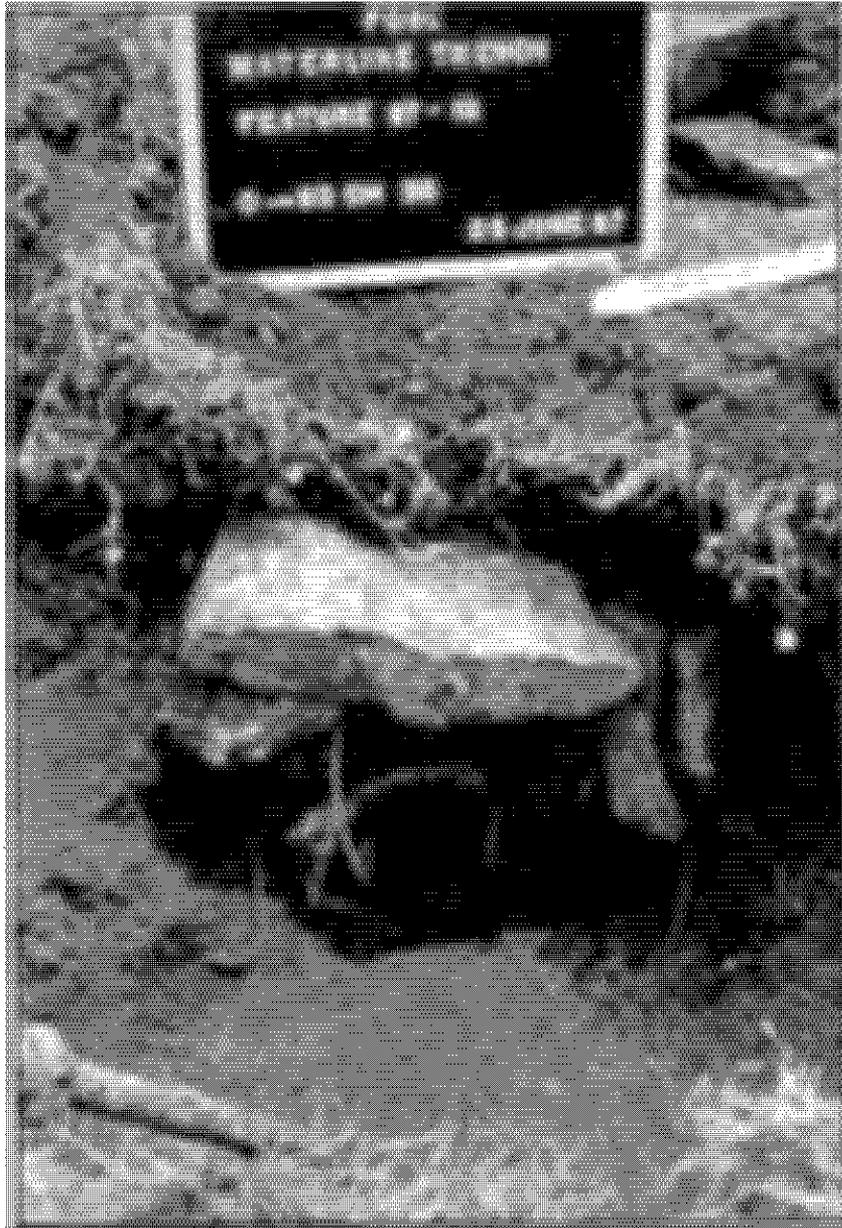


Figure 12. Feature 97-16, perimeter wall.



Figure 13. Feature 97-19, stone walk.

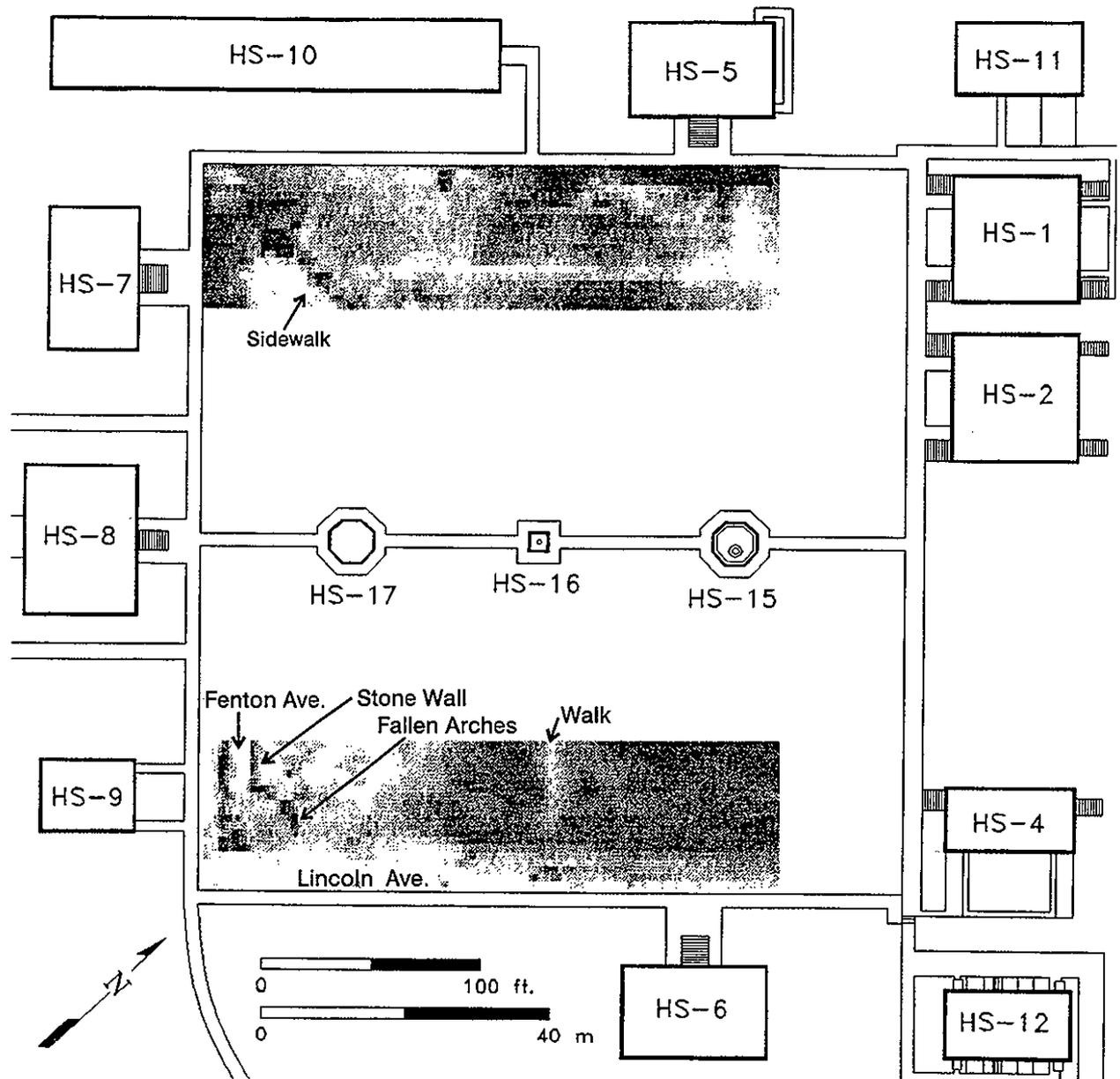


Figure 14. Soil resistivity survey of parade ground.

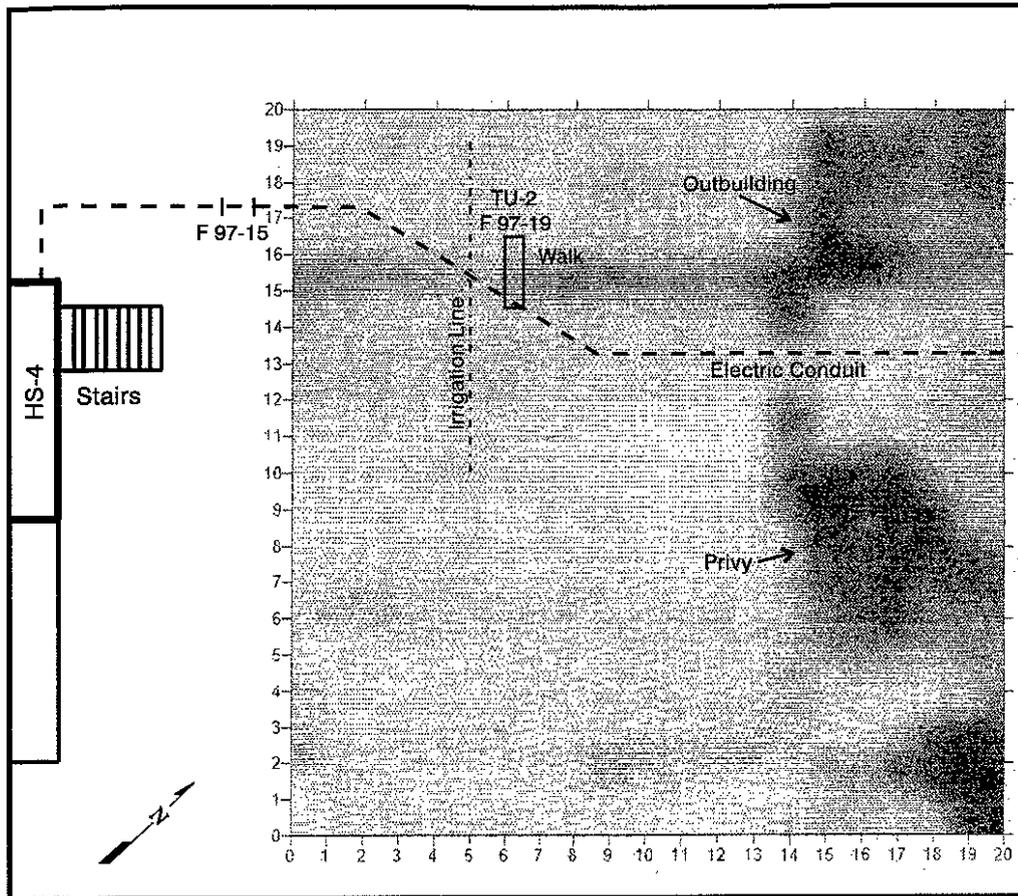


Figure 15. Soil resistivity survey north of HS-4.