

historic structures report
ruins stabilization
architectural data
september 1983

FORT BOWIE

NATIONAL HISTORIC SITE / ARIZONA



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HISTORIC STRUCTURES REPORT
RUINS STABILIZATION
ARCHITECTURAL DATA
FORT BOWIE NATIONAL HISTORIC SITE
COCHISE COUNTY
ARIZONA

Prepared by
John Robbins

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PREFACE

This report has been prepared to satisfy the historic architecture research needs outlined in Development/Study Package Proposal 105 which provided for the preparation of an Historic Structures Report, Architectural Data Section - Fort Bowie National Historic Site - Ruins Stabilization.

An Historic Structures Report is the planning document for actual work on a resource. In this report, because only above-grade remains require continual stabilization, the distinction is made between above-grade and below-grade structures. As documentation of stabilization work completed and proposed, this report is a discussion of above-grade remains. As a current inventory of structures at Fort Bowie, this report includes descriptions of subgrade structures although no work is planned.

Stabilization work at Fort Bowie was planned in two phases: preservation of historic adobe and preservation of historic stonework. Adobe stabilization work was substantially completed by December 1978. During the 1979 work season, some soil-cement adobe still within historic fabric were removed, historic fabric and non-historic adobe stabilization materials were maintained, and structures were backfilled to approximate grade at the time of acquisition by the National Park Service. For both phases of the Fort Bowie project, this report is a summary of the planning documents and a completion report.

The assistance provided by Regional, Western Archeological Center, Southern Arizona Group and area personnel, both at Fort Bowie National Historic Site and at Chiricahua National Monument, is greatly appreciated.

John Robbins
October 1979

I. ADMINISTRATIVE DATA

A. Name and Number of Structures

Fort Bowie National Historic Site, Cochise County, Arizona comprises at least 108 structures with above-grade or at-grade remains.

In the following list, historic Structure (HS) number precedes name. The twenty-six structures preceded by an asterisk (*) were at least partial adobe ruins prior to the 1978 stabilization work. (During the 1978 work, non-historic soil-cement materials were removed. The adobe remains of some structures were soil-cement throughout and when the soil-cement was removed, only stone remains were left.) The balance are structures with above-grade stone remains only.

1. Structure name

All structures are assigned names used by the U.S. Military. Structures for which there is no record of an historic name are called "unidentified." Some remains of structures are small and in positions that possibly associate them with larger nearby structures. For example, one might suppose a small structure to the rear of a residence to be a detached toilet. Such undocumented names assigned by association are avoided.

2. Structure number

HS 001-073: These structures are within the area known as the second Fort Bowie or Fort Bowie 2.

HS 001-035: These structures are numbered according to map 7 (1889) in Sheire, 1968.

HS 036-038: These structures are numbered according to Montgomery, 1966.

HS 039-043: These structures are numbered according to Morris, 1967.

HS 050-078: These structures were numbered since 1967. Archeological investigation of most structures is incomplete. Archeologist Robert Herskovitz (Herskovitz, 1973) and the author collaborated to devise structure numbers which would not associate the many unnumbered and unnamed structures with larger structures nearby. There is a break in numbering from 043-050 to make the distinction between structures previously investigated and those still to be studied. HS 050-056 were numbered by Herskovitz and the author. HS 057-078 were first numbered during preparation of the 1978 revision of the Fort Bowie List of Classified Structures (LCS) survey.

HS 079-100: No structures have been assigned these numbers.

HS 101-154: These structures are within the area known as the first Fort Bowie or Fort Bowie 1.

HS 101-116: These structures are numbered according to Morris, 1967.

HS 150-154: These structures were first numbered during preparation of the 1978 LCS survey. Again, the numbers were devised to avoid association of small structures with larger structures nearby. There is a break in numbering from 116-150 to make the distinction between structures previously investigated and those located and numbered during the 1978 LCS survey.

HS 200-214: These structures are outside the areas of Fort Bowie 1 and 2, and were first numbered during preparation of the 1978 LCS survey. Generally, the structures along the foot trails are numbered first, south to north, followed by the structures in the Willow Gulch area.

<u>HS</u>	<u>Name</u>
*001	Officers' Quarters
002	Officers' Quarters
*003	Officers' Quarters
*004	Officers' Quarters
*005	Officers' Quarters
006	Officers' Quarters
007	Tailor Shop
*008	Cavalry Barracks
009	Kitchen
*010	Cavalry Barracks
*011	Wash House
*012	Oil House
*013	Granary
*014	Subsistence Storehouse
*015	Old Hospital
016	Old Guard House
017	Adjutant's Office
*018	Corrals
019	Infantry Barracks
020	Kitchen and Messroom
*021	Butcher Shop
022	Quartermaster Storehouse
023	Engine and Ice Machine House
024	Privy
*025	Commanding Officer's Quarters
*026	New Guard House
027	Non-Commissioned Staff Quarters
*028	New Bakery
029	Civilian Employees' Quarters
030	Laundresses' Quarters
031	Mess Hall
032	Schoolhouse
033	New Hospital
*034	Hospital Steward's Quarters
*035	Post Trader's Store

036	Magazine
*037	Gun Shed
038	Unidentified
039	(No structure located)
040	(No structure located)
041	(No structure located)
042	Fire Hydrant
*043	Lime Kiln
050	Unidentified
*051	Unidentified
052	Unidentified
053	Unidentified
054	Unidentified
055	Unidentified
*056	Unidentified
057	Wall
058	Wall
059	Wall
060	Wall
061	Wall
062	Wall
063	Wall
064	Wall
065	Wall
066	Wall
067	Wall
068	Reservoir
069	Reservoir
070	Unidentified
071	Reservoir - Ice Caves
072	Unidentified
073	Unidentified
074	Unidentified
075	Unidentified
076	Unidentified
077	Wall
078	Wall
101	Unidentified
102	Unidentified
103	Unidentified
104	Unidentified
105	Unidentified
106	Unidentified
107	Unidentified
108	Unidentified
109	Unidentified
110	Unidentified
111	Unidentified
112	Unidentified
113	Unidentified
114	Unidentified

115	Unidentified
*116	Unidentified
150	Unidentified
151	Unidentified
152	Unidentified
153	Unidentified
154	Unidentified
200	Unidentified
201	Wall
202	Butterfield Stage Station
203	Butterfield Trail
204	Butterfield Trail bridge abutments
205	Cemetery
206	Unidentified
207	Wall
208	Wall
209	Unidentified
210	Unidentified
211	Unidentified
212	Unidentified
213	Quartz mine operations
214	Dam

B. Order of Significance and Location of Structures

The order of significance and location of structures by Universal Transverse Mercator (UTM) reference are included in the 1978 LCS survey. Copies of the survey are on file at the Western Regional Office and in the Division of Adobe/Stone Conservation Archives, Western Archeological Center, Tucson, Arizona.

Sheet 1 of drawing 424/25000 (VII.B., this report) shows the vicinity of the site, the boundaries of the area, and shows all 108 structures in relation to one another, but without topography.

Drawing 424/3002A is a 38-sheet set (including indices) which shows topography and the location of most ruins. Drawing 424/3002A is not included in this report, but is available from the Graphic Systems Division, Branch of Micrographics (Plan Files) of the Denver Service Center.

C. Proposed Use of Structures

Fort Bowie National Historic Site will be preserved for year-round day use by visitors. All historic resources are to be preserved as closely as possible to the condition of the structures at the time of acquisition of the area by the National Park Service pursuant to "an Act to authorize the establishment of the Fort Bowie National Historic Site in the State of Arizona," dated August 30, 1964. Development will conform to the approved interpretive theme, one of "historical abandonment."

D. Justification for Such Use
Fort Bowie National Historic Site is on the National Register of Historic Places.

E. Cooperative Agreements Executed or Proposed for Area Operation
Approximately 80 unpatented mining claims predate the establishment of the historic site, but appear to be abandoned as no annual assessment work has been recorded. Arizona Land Order 035307 withdrew from mineral entry 590 acres of public domain administered by the Bureau of Land Management adjacent to the historic site. This buffer zone was established to preserve, protect and enhance scenic and natural characteristics of the Site and to prevent adverse uses and visual intrusions. An additional 1,780 acres are presently proposed for withdrawal.

By administrative agreement, the Bureau of Land Management is responsible for the management of grazing on the site. Agreements covering grazing rights and water rights are in effect with two neighboring ranches.

Rights-of-way and easements are in effect for the Apache Pass Road (Cochise County), a gas pipeline (El Paso Natural Gas Company), and the Apache Pass electricity transmission line (Sulphur Springs Valley Electric Cooperative).

F. Brief Description of Proposed Construction Activities
The intention of all work on the ruins of Fort Bowie is the preservation of historic fabric. Since abandonment by the U.S. Military in 1894, the structures have deteriorated and by 1964, when the site was acquired by the National Park Service, all structures were substantially ruined. Initial stabilization work began in 1967 when soil-cement materials were used for structural repairs, adobe and stone consolidation, and as a "cap" or wearing surface over fragile historic fabric.

Because non-historic and historic materials were incompatible, erosion of historic fabric was encouraged. In 1977, a program of restabilization was formulated to slow deterioration by replacing soil-cement with more compatible natural materials. After sampling, testing and matching possible stabilization materials with historic fabric, work on adobe ruins began in June of 1978. Restabilization of historic stonework began in mid-summer of 1979. Adobe and stone stabilization work were completed in September of 1979.

II. ARCHITECTURAL DATA

A. History
The subjugation of the Apaches and the military protection of overland travel are themes which the ruins of Fort Bowie recall. Apache Pass was the eastern entrance to the Gadsden Purchase of 1854. Apache Pass afforded the shortest route from the Rio Grande to Tucson and was one of the few routes with water. Fort Bowie served to protect military and civilian traffic through the Chiricahua Mountains, guarding the southern route to farther western land.

Troops were first stationed at the post named for Colonel George Washington Bowie, Fifth California Volunteers, by order of Brigadier General J. H. Carleton of the Sixth Cavalry. On July 25 or 26, 1856, 100 men of Company G, Fifth California Volunteer Infantry, arrived under the command of Major T. A. Coult. The construction of the first Fort Bowie began that year; six years later, construction began on the second fort, leaving most buildings of the first occupied by civilians.

During the construction of Fort Bowie and the extended occupation by the United States Army from 1862 until October 17, 1894, the fort served as an outpost in the Army's campaigns against the Chiricahua Apaches. Fort Bowie is significant chiefly as the base of operations from which Generals George Crook and Nelson Miles launched the expeditions that brought, in 1886, the final surrender of Geronimo. Again, the ruins of the outpost recall this brief, violent and expansive era of American history.

The following is a brief summary of preservation work at Fort Bowie between 1894 when Fort Bowie was abandoned by the U.S. Military and the 1978 work season.

1894: October 17 - Fort Bowie was abandoned when the Apache threat had apparently ended. The usual practice was for the quartermaster to inventory all government property. Usable and transportable property would be sent to other posts in the department or to the nearest supply depot.

November 14 - Fort Bowie was transferred to the Department of the Interior, Bureau of Land Management. Soon after Fort Bowie was abandoned, area residents began scavenging the structures and removing usable materials, especially lumber.

1895: Troops were sent to Fort Bowie to protect Government property from looting. Troops were withdrawn that same year.

1896: Fort Bowie was temporarily occupied by troops observing Apache activity along the Mexican border.

1911: 270 acres of the land which is part of the present Fort Bowie National Historic Site were sold to ranchers at public auction in Phoenix, Arizona. The balance of the military reservation continued to be managed by the Bureau of Land Management.

1963: Acquisition of private lands began.

1964: 270 acres of acquired private land and 630 acres of land managed by the Bureau of Land Management were established as Fort Bowie National Historic Site by "an Act to authorize the establishment of the Fort Bowie National Historic Site in the State of Arizona, and for other purposes (78 Stat. 681)," dated August 30, 1964. At that time, very few wood fragments remained and erosion of exposed adobe walls, lime plaster and lime mortar was far advanced.

1967: Major stabilization work was performed by the Ruins Stabilization Unit of the Southwest (now Western) Archeological Center. The field work was under the direction of Don P. Morris. Work performed included excavation of building remains, consolidation of stone foundations, support of individual wall fragments with soil-cement adobe, veneer of eroded vertical wall surfaces with soil-cement adobe, capping of eroded adobe tops and sloped sides with soil-cement adobe, regrading, and construction of drainage diversion walls. This work is recorded in Morris, 1967.

A drainage system was laid in the Post Trader's Store, HS 035, to prevent ponding of rainwater and subsequent wicking of water into adobe. A concrete arch was poured in one wall of HS 035 to consolidate the wall and prevent further cracking. This work is recorded in Morris, 1968.

1968: Portland cement plaster and asphalt were applied to stone and adobe foundations. Exact location of this work is unrecorded, but general work is recorded in Morris, 1968.

1971: 729 linear feet of adobe wall base were treated with a water-repelling chemical, Adobe-Seal. Exact location of this work is unrecorded, but general work is recorded in Henderson, 1971.

1972: Fort Bowie National Historic Site was formally opened in July. The drainage system of HS 035, installed in 1967, was replaced to correct ponding. This work is recorded in Henderson, 1972.

1973: Cracks, holes, basal erosion, etc., in historic and non-historic fabric were repaired by patching with unformed natural or chemically-amended adobe. The extent or location of patching with each material is unrecorded.

Drainage work was completed in HS 005, 008, 010, 018, 028, 035, and Reservoir A (HS 069). Drainage diversion walls were constructed near HS 008, 010, and 028. A thin Daraweld-amended cement plaster was applied to walls of HS 005 and 021, at least. Graffiti on the exterior plaster of HS 008 was obscured with Daraweld-amended plaster "antiqued" with muddy water. Subgrade adobe walls of ruins with above-grade remains were parged with Daraweld-amended cement. This work is recorded in Henderson, 1973.

B. The Historic Period

The appropriate level of treatment for the ruins of Fort Bowie is preservation. The condition to be preserved is the acquisition condition: how the area appeared when the National Park Service acquired the site in 1964. This is the closest reasonable approximation of 'historical abandonment', the approved interpretive theme for Fort Bowie (USNPS, Final Environmental Assessment and Master Plan, 1975). All features and materials extant prior to 1964 are considered to be historic and subject to preservation of their changing existing conditions. All features and materials added after 1964 are considered to be non-historic and should be retained or changed according to the preservation needs of the historic structures and the historic scene.

C. Existing Conditions

A 1965 Project Construction Proposal (USNPS, Files-DSC) provides an excellent account of the extent and condition of the resource:

At Fort Bowie there are 15,766 lineal (sic) feet of historic wall, including 2,045 feet of adobe wall which stand from 1 to 12 feet high (24,233 square feet of adobe wall surface). There is extensive basal erosion and under-cutting throughout the site. Fallen walls have created mounds and debris which must be cleared to free foundations for preservation and to create adequate on-site exhibits for visitor use. Extensive stabilization measures are mandatory to preserve the ruins.

Restricted and controlled excavations will be made to recover artifacts for exhibit and research purposes.

Beginning with the first stabilization work in 1967, subsequent to the above proposal, the historic structures of Fort Bowie National Historic Site have been treated to the extent that in 1977 the ruins did not closely resemble the ruins at the time of National Park Service acquisition. Some change resulted from continual natural deterioration, but most change resulted from National Park Service stabilization and maintenance work.

The descriptions of existing conditions are from field observations during the months of August-December 1977 and from study of the various Historic Structures Reports, stabilization reports, emergency stabilization reports and project completion reports cited in the Bibliography, V, this report.

In the building-by-building descriptions below, the numbers listed under "Drawings" and "Photographs" are included in VII.A. and B., this report. The numbers were assigned by the Branch of Micrographics of the Denver Service Center, where the drawings and photographs are stored.

HS 001
Officers' Quarters

Dimensions: 50 feet north-south by 22 feet east-west. Adobe walls are approximately 6 feet high above grade.

Drawings: 424/25000, Sheets 1, 4, and 5.

Photographs: 424/25000, Sheets 23-27.

HS 001 is the adobe and stone remains of a structure built by the U.S. Military in 1868. Five sections of adobe walls are extant. The northern stone foundation wall is evident at grade. Historic adobes were laid with soil and lime mortars. The stones are undressed limestone rock. Historic mortar is not evident and not recorded. Historic lime plaster is evident on the west elevation.

In 1967, the National Park Service partially excavated around adobe walls, added soil-cement caps to historic adobe fabric and edged historic plaster with tinted cement. In 1978, soil-cement caps and some plaster edging were removed. Voids were filled with mud mortar and adobe pieces. Deteriorated portions of historic adobe were rebuilt with new unamended adobe blocks and mud mortar. Adobe walls were capped with unamended mud. The stonework is unaltered since acquisition.

HS 002
Officers' Quarters

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 002 is the subgrade remains of a structure built by the U.S. Military in 1868. No features are evident at grade. The structure is unexcavated and unstabilized.

HS 003
Officers' Quarters

Dimensions: Adobe portion: 6 1/2 feet north-south by 11 feet east-west by 5 feet high above grade.

Stone portion: 34 feet long (total) by 1 foot high above grade.

Drawings: 424/25000, Sheets 1 and 5.

Photographs: 424/25000, Sheets 27 and 28.

HS 003 is the adobe and masonry remains of a structure built by the U.S. Military ca. 1869-1874. One section of adobe walls and five sections of masonry walls are extant. Historic adobes were laid with soil and lime mortars. The masonry is undressed limestone rock and brick. Historic stone mortar is not evident and not recorded. No plaster is evident.

In 1967, the National Park Service partially excavated around adobe and stone remains, added soil-cement caps to historic adobe, and pointed and relaid historic stone and brick with soil-cement mortar. In 1978, soil-cement caps were removed, voids were filled with mud mortar, and adobe walls were capped with unamended mud.

HS 004 and 005
Officers' Quarters

Dimensions: 37 feet north-south by 61 feet east-west by 5-7 feet high above grade.

Drawings: 424/25000, Sheets 1 and 6.

Photographs: 424/25000, Sheets 28-32.

HS 004 and 005 are connected and are described together. HS 004 and 005 are the adobe and stone remains of structures built by the U.S. Military in 1869. Five sections of adobe walls on 2-foot-high stone foundation walls are evident. The stones are undressed, uncoursed limestone rock. Historic stone and adobe were both laid with soil and lime mortars. Historic lime plaster is evident on historic adobe fabric and on historic stonework.

In 1967, the National Park Service added soil-cement caps and infill to historic adobe and pointed and relaid historic stone with soil-cement mortar. In 1978, soil-cement caps were removed, voids were filled with mud mortar and adobe walls were capped with unamended mud.

HS 006
Officers' Quarters

Dimensions: Stone portion: 40 feet long (total) by 1-2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 006 is the adobe and stone remains of a structure built by the U.S. Military ca 1870-1874. Stone foundation walls and mounds of deteriorated adobes are evident. The stones are undressed limestone rock originally laid with lime mortar. No plaster is evident. The structure is unexcavated and unstabilized.

HS 007
Tailor Shop

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 007 is the subgrade remains of a structure built by the U.S. Military in 1869. No features are evident above grade. The structure is unexcavated and unstabilized.

HS 008
Cavalry Barracks

Dimensions: 155 feet north-south by 34 1/2 feet east-west. Historic adobe is 5 feet high above historic lime grout. Historic lime grout is approximately 6 feet high above stone foundation walls which are approximately 2 feet high above grade .

Drawings: 424/27009 (HABS), 424/25000, Sheets 1 and 6.

Photographs: 424/25000, Sheets 32-44.

HS 008 is the adobe, stone, and lime grout remains of a structure built by the U.S. Military in 1870. The four perimeter walls and small portions of the interior partition walls are evident. The stones are undressed, uncoursed limestone rock. Historic stone and adobes were laid with soil and lime mortars. Historic lime plaster is evident on the interior and exterior of all walls.

Since 1967, the National Park Service has partially excavated the structure, added soil-cement caps to historic adobe, filled voids in lime grout with cement mortar, edged historic plaster with tinted cement, pointed and relaid historic stone with soil-cement mortar, terraced the interior with soil-cement retaining walls, dug dry wells to drain the interior, and plastered and painted historic exterior plaster.

In 1978, soil-cement caps, fill and reconstruction were removed, voids were filled with mud mortar and unamended adobes and the remains of interior partition walls were stabilized with an unamended adobe facing. All adobe walls were capped with unamended mud.

HS 009
Kitchen

Dimensions: 28 feet north-south by 12 feet east-west.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 009 is the adobe and stone remains of a structure built by the U.S. Military in 1870. Stone foundation walls and mounds of deteriorated adobes are evident. The stones are undressed limestone. The historic stone mortar is not evident and not recorded. No plaster is evident. The structure is unexcavated and unstabilized.

HS 010
Cavalry Barracks

Dimensions: 35 feet north-south by 100 feet east-west by 5-7 feet high above grade.

Drawings: 424/25000, Sheets 1 and 7.

Photographs: 424/25000, Sheets 45-47.

HS 010 is the adobe and stone remains of a structure built by the U.S. Military in 1870. Three adobe wall sections and stone foundation piers are evident. Historic adobes were laid with lime mortar. The stones are undressed, uncoursed limestone rock originally laid with lime mortar. Plaster is evident at the base of the south elevation of the northeastern adobe wall section.

In 1967, the National Park Service partially excavated around all walls and piers, added soil-cement caps to historic adobe, pointed and relaid historic stonework, and edged historic plaster with cement.

In 1978, soil-cement caps and the plaster edging were removed. Deteriorated portions of historic adobe were rebuilt with new unamended adobe blocks and mud mortar. Adobe walls were capped with unamended mud.

HS 011
Wash House

Dimensions: 19 feet north-south by 33 feet east-west. Adobe remains are approximately 6 inches high above stone foundation walls which are approximately 4 feet high above grade.

Drawings: 424/25000, Sheets 1 and 7.

Photographs: 424/25000, Sheet 47.

HS 011 is the adobe and stone remains of a structure built by the U.S. Military in 1886. A small mound of deteriorated adobe and stone perimeter foundation walls are evident. Historic adobe mortar is not evident or recorded. The stones are undressed, uncoursed limestone and granitic rock originally laid with lime mortar. No plaster is evident.

Since 1967, the National Park Service has chemically treated above-grade remains, and pointed and relaid historic stonework.

HS 012
Oil House

Dimensions: 22 1/2 feet north-south by 31 feet east-west. Adobe remains are approximately 1 foot high above stone foundation walls which are evident at grade.

Drawings: 424/25000, Sheets 1 and 8.

Photographs: 424/25000, Sheet 48.

HS 012 is the adobe and stone remains of a structure built by the U.S. Military ca. 1871-1874. One small portion of adobe wall and three stone foundation wall corners are evident. Historic adobe was laid with soil mortar. The stones are undressed limestone rock originally laid with lime mortar. Historic interior and exterior mud plaster is evident on adobe remains. Historic exterior lime plaster is evident on stone remains.

Since 1967, the National Park Service has chemically treated the adobe remains.

HS 013
Granary

Dimensions: 24 feet north-south by 15 feet east-west.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 013 is the adobe and stone remains of a structure built by the U.S. Military in 1867. Mounds of deteriorated adobe, approximately 10 linear feet of lime plaster along the south elevation, and the southeastern corner of the stone foundation walls are evident at grade. Foundation stones are undressed limestone. Historic stone and adobe mortars are not evident and are not recorded.

Since 1967, the National Park Service has chemically treated the adobe remains.

HS 014 and 015
Subsistence Storehouse (014) and Old Hospital (015)

Dimensions: 140 feet north-south by 175 feet east-west.

Drawings: 424/27003 (HABS. Part of HS 014-015 is shown with HS 032) and 424/25000, Sheets 1, 8, and 9.

Photographs: 424/25000, Sheets 49-54.

HS 014 are connected and are described together. HS 014 is the adobe and stone remains of a structure built by the U.S. Military in

1866. HS 015 is the adobe and stone remains of a structure built by the U.S. Military in 1870. Four sections of adobe walls and some stone foundation walls are evident. The stones are undressed, uncoursed granitic and limestone rock originally laid with lime mortar. Historic adobes were laid with soil and lime mortars. Interior and exterior historic plaster are evident.

In 1967, the National Park Service partially excavated the structure, added soil-cement caps to historic adobe, filled voids with soil-cement blocks and mortar, reconstructed portions with soil-cement adobe, and pointed and relaid historic stonework with soil-cement mortar. In 1978, soil-cement adobe materials were removed, and adobe walls were capped and voids were filled with unamended mud.

HS 016
Old Guard House

Dimensions: 18 feet north-south by 36 feet east-west.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 016 is the adobe and stone remains of a structure built by the U.S. Military in 1870. Portions of stone foundation walls at grade and mounds of deteriorated adobe are evident. The stones are undressed granitic rock. No historic stone or adobe mortars are recorded. No plaster is evident. The structure is unexcavated and unstabilized.

HS 017
Adjutant's Office

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 017 is the subgrade remains of a structure built by the U.S. Military ca. 1880-1881. No features are evident at grade. The structure is unexcavated and unstabilized.

HS 018
Corrals

Dimensions: 175 feet north-south by 245 feet east-west by 1-7 feet high above grade.

Drawings: 424/27007 (HABS) and 424/25000, Sheets 1 and 10.

Photographs: 424/25000, Sheets 54 and 62.

HS 018 is the adobe and stone remains of a structure built by the U.S. Military in 1870. Perimeter corral walls and partition walls of five shops are evident. The stones are undressed, uncoursed granitic and limestone rock originally laid with lime mortar. Historic adobes were laid with soil and lime mortars. No plaster is evident.

Since 1967, the National Park Service has partially excavated the structure, added soil-cement caps to historic adobes, filled voids with soil-cement blocks and mortar, pointed and relaid historic stonework with soil-cement mortar, and chemically treated adobe and stone remains. In 1978, soil-cement adobe materials were removed, and adobe walls were capped and voids were filled with unamended mud.

HS 019
Infantry Barracks

Dimensions: 150 feet north-south by 100 feet east-west by 1-5 feet high above grade.

Drawings: 424/27008 (HABS) and 424/25000, Sheets 1 and 16.

Photographs: VI. this report.

HS 019 is the stone remains of a structure built by the U.S. Military in 1883. Stone foundation walls are evident. The stones are undressed, uncoursed granitic and limestone rock originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service pointed and relaid historic stone with soil-cement mortar.

HS 020
Kitchen and Messroom

Dimensions: 55 feet north-south by 28 feet east-west by 1-3 feet high above grade.

Drawings: 424/25000, Sheets 1, 10, and 16.

Photographs: 424/25000, Sheet 63 and VI. this report.

HS 020 is the adobe, stone, and wood remains of a structure built by the U.S. Military in 1883. Historic adobe remains were removed by the National Park Service in 1967 and replaced with soil-cement materials which were removed and not replaced in 1978. The stones are undressed, uncoursed granitic and limestone rock originally laid with lime mortar. In 1967, historic stonework was pointed and relaid with soil-cement mortar. A single fragment of historic wood framing in the southwestern corner was reset in 1967. No plaster is evident. The structure was partially excavated in 1967.

HS 021
Butcher Shop

Dimensions: 24 feet north-south by 60 feet east-west by 1-3 feet high above grade.

Drawings: 424/25000, Sheets 1 and 11.

Photographs: 424/25000, Sheets 63-65.

HS 021 is the adobe and stone remains of a structure built by the U.S. Military in 1889. Adobe perimeter walls and portions of the stone foundation wall are evident. The stones are undressed, uncoursed limestone rock originally laid with lime mortar. Historic adobes were laid with soil mortar. Lime plaster is evident at grade along the south elevation.

In 1967, the National Park Service partially excavated the structure, added soil-cement caps to historic adobes, filled voids with soil-cement blocks and mortar, and pointed and relaid historic stone with soil-cement mortar. In 1978, most soil-cement adobe materials were removed, and historic adobes were capped and voids were filled with unamended mud.

HS 022
Quartermaster Storehouse

Dimensions: 29 feet north-south by 104 feet east-west by 1-2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 17.

Photographs: VI. this report.

HS 022 is the stone remains of a structure built by the U.S. Military in 1883. Twenty-eight stone masonry foundation piers are evident. The stones are undressed, uncoursed limestone rock originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 023
Engine and Ice Machine House

Dimensions: 3 feet north-south by 8 feet east-west by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 023 is the stone, brick, and metal remains of a structure built by the U.S. Military in 1886. A masonry foundation with four projecting metal rods is evident. The stones are undressed, uncoursed limestone rock originally laid with lime mortar. Historic brick fragments are evident in mortar on top of the foundation. The metal remains are 1/2-inch diameter wrought iron rods threaded at the upper end. Historic lime plaster is evident on stonework.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 024
Privy

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 024 is the subgrade remains of a structure built by the U.S. Military ca. 1889. No features are evident above grade. The structure is unexcavated and unstabilized.

HS 025
Commanding Officer's Quarters

Dimensions: 58 feet north-south by 66 feet east-west by 1-4 feet high above grade.

Drawings: 424/27001 (HABS) and 424/25000, Sheets 1 and 5.

Photographs: 424/25000, Sheet 65 and VI. this report.

HS 025 is the adobe, stone, and brick remains of a structure built by the U.S. Military in 1884. One adobe wall, stone chimney and perimeter foundations, and stone foundation piers are evident. Historic adobes were laid with soil mortar. The stones are undressed, uncoursed limestone rock originally laid with lime mortar. Historic bricks and brick fragments are scattered throughout the site. No plaster is evident.

In 1967, the National Park Service added soil-cement caps to historic adobes, and pointed, relaid, and plastered historic stone with soil-cement mortar. In 1978, soil-cement caps were removed and the adobe wall was capped with unamended mud.

HS 026
New Guard House

Dimensions: 43 1/2 feet north-south by 43 1/2 feet east-west. Adobe remains are approximately 5 feet high above stone foundation walls which are approximately 2 feet high above grade.

Drawings: 424/27002 (HABS) and 424/25000, Sheets 1 and 11.

Photographs: 424/25000, Sheets 66-68.

HS 026 is the adobe, stone and wood remains of a structure built by the U.S. Military ca. 1885-1886. Historic adobes were laid with soil mortar. The stones are undressed, uncoursed limestone originally laid with lime mortar. The wood remains are a lintel fragment in the south foundation wall. Historic exterior plaster is evident.

In 1967, the National Park Service partially excavated the structure, added soil-cement caps to historic adobes, filled voids with soil-cement blocks and mortar, and pointed and relaid historic stones with soil-cement mortar. In 1978, soil-cement adobe caps were removed, and adobe walls were capped and voids were filled with unamended mud.

HS 027
Non-Commissioned Staff Quarters

Dimensions: 39 feet north-south by 45 feet east-west by 1-3 feet high above grade.

Drawings: 424/25000, Sheets 1 and 18.

Photographs: No photographs are included in this report.

HS 027 is the stone remains of a structure built by the U.S. Military in 1883. Stone perimeter foundation walls are evident. The stones are undressed, uncoursed limestone originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service pointed and relaid historic stone with soil-cement mortar.

HS 028
New Bakery

Dimensions: 23 feet north-south by 45 1/2 feet east-west. Adobe remains are 1-5 feet high above stone foundation walls. Foundation walls are 1-4 feet high above grade.

Drawings: 424/25000, Sheets 1 and 12.

Photographs: 424/25000, Sheets 69-71.

HS 028 is the adobe, stone, and brick remains of a structure built by the U.S. Military in 1886. Historic adobe was laid with soil mortar. The stones are undressed, uncoursed limestone originally laid with lime mortar. Historic bricks are evident at grade as historic flooring and as the historic oven foundation. Interior lime plaster is evident.

In 1967, the National Park Service added soil-cement caps to historic adobes, filled voids with soil-cement blocks and mortar, partially reconstructed one interior wall with soil-cement blocks and mortar, and pointed and relaid historic stone with soil-cement mortar. In 1978, soil-cement materials were removed and adobe walls were capped and voids were filled with unamended mud.

HS 029
Civilian Employees' Quarters

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 029 is the subgrade remains of a structure built by the U.S. Military ca. 1883-1889. A two-foot long section of stone wall with plaster on one side is evident at grade. The structure is unexcavated and unstabilized.

HS 030
Laundresses' Quarters

Dimensions: 15 feet north-south by 38 feet east-west by 1-2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 18.

Photographs: VI. this report.

HS 031
Mess Hall

Dimensions: 70 feet north-south by 26 feet east-west by 1-2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 18.

Photographs: VI. this report.

HS 032
Schoolhouse

Dimensions: 50 feet north-south by 26 feet east-west by 1-3 feet high above grade.

Drawings: 424/27003 (HABS) and 424/25000, Sheets 1 and 18.

Photographs: VI. this report.

HS 030, 031, and 032 are the stone remains of structures built by the U.S. Military ca. 1883-1889, 1889, and 1889 respectively. Undressed, uncoursed limestone foundations are evident for each. For HS 030 and 031, the stones were originally laid with soil mortar; in HS 032, the stones were originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service pointed and relaid stone with soil-cement mortar.

HS 033
New Hospital

Dimensions: 80 feet north-south by 135 feet east-west by 1-6 feet high above grade.

Drawings: 424/27004 (HABS) and 424/25000, Sheet 1.

Photographs: VI. this report.

HS 033 is the stone remains of a structure built by the U.S. Military in 1889. The perimeter foundation wall and 47 foundation piers are evident. The stones are undressed, uncoursed limestone originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service pointed and relaid historic stonework with cement mortar.

HS 034
Hospital Steward's Quarters

Dimensions: 18 feet north-south by 32 feet east-west by 1-7 feet high above grade.

Drawings: 424/25000, Sheets 1, 12, and 19.

Photographs: See 424/25000, Sheet 71 and VI. this report.

HS 034 is the stone remains of a structure built by the U.S. Military in 1889. Stone foundation walls are evident. The stones are undressed, uncoursed limestone originally laid with lime mortar. No plaster is evident. In 1967, the National Park Service removed a small mound of deteriorated historic adobe from the northeastern corner,

replaced it with soil-cement adobes, and pointed and relaid historic stone with soil-cement mortar. In 1978, the soil-cement adobes were removed.

HS 035

Post Trader's Store

Dimensions: 70 feet north-south by 150 feet east-west. Adobe remains are 1-10 feet high above stone foundation walls which are 1-7 feet high above grade.

Drawings: 424/27006 (HABS) and 424/25000, Sheets 1 and 13.

Photographs: 424/25000, Sheets 72-87 and VI. this report.

HS 035 is the adobe and stone remains of a structure built during and after 1870. Historic adobe and stone masonry were originally laid with soil and lime mortars. The stones are undressed, uncoursed granitic and limestone rock.

In 1967, the National Park Service partially excavated and exposed the structure, added soil-cement caps to historic adobes, and pointed and relaid historic stone. Since 1967, subgrade drains have been installed throughout the structure and covered with non-historic gravel, some historic adobe has been plastered with cement, and some historic adobe has been chemically treated. In 1978, soil-cement materials were removed and adobe walls were capped and voids were filled with unamended mud.

HS 036

Magazine

Dimensions: 16 feet north-south by 16 feet east-west by 10 feet high above grade.

Drawings: 424/27005 (HABS) and 424/25000, Sheet 1.

Photographs: VI. this report.

HS 036 is the stone remains of a structure built by the U.S. Military ca. 1889-1894. The stones are roughly dressed and coursed limestone originally laid with lime mortar. No plaster is evident. In 1967, the National Park Service pointed and relaid some historic stone with cement mortar.

HS 037
Gun Shed

Dimensions: 9 feet north-south by 11 feet east-west. Adobe remains are 1-4 feet high above stone foundation walls which are 1-2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 13.

Photographs: 424/25000, Sheet 88.

HS 037 is the adobe and stone remains of a structure built by the U.S. Military ca. 1889-1894. Historic adobes were laid with soil and lime mortars. The stones are undressed, uncoursed limestone originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service added soil-cement caps to historic adobes, filled voids with soil-cement blocks and mortar, and pointed historic stonework with soil-cement mortar. In 1978, soil-cement caps were removed, and adobe walls were capped and voids filled with unamended mud.

HS 038
Unidentified

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 038 is the subgrade remains of a structure built by the U.S. Military ca. 1889-1894. No features are evident at grade. The structure is unexcavated and unstabilized.

HS 039, 040, and 041

(No structures were located during preparation of this report. These structure numbers are listed in Morris, 1967 (except that HS 021 and 039 are switched) and are included here so that cross-references between this report and Morris, 1967 are complete.)

HS 042
Fire Hydrant

Dimensions: 23 feet north-south by 16 feet east-west by 3 feet deep below grade.

Drawings: 424/25000, Sheets 1 and 19.

Photographs: No photographs are included in this report.

HS 042 is the stone remains of a structure built by the U.S. Military after 1889. The stones are undressed, uncoursed limestone originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service pointed and relaid historic stone with cement mortar.

HS 043
Lime Kiln

Dimensions: 13-foot exterior diameter at base.

Drawings: 424/25000, Sheets 1 and 43.

Photographs: 424/25000, Sheet 89 and VI. this report.

HS 043 is the stone and brick remains of a structure built by the U.S. Military. The construction date is not documented. The stones are undressed, uncoursed limestone originally laid with lime mortar. Brick remains are a row of historic brick set in lime mortar as an opening lintel at the base of the east elevation. No plaster is evident.

In 1967, the National Park Service added a single course of soil-cement adobes to the western top of the structure and pointed and relaid some historic stone with cement mortar. In 1978, the soil-cement adobes were removed and not replaced.

HS 050
Unidentified

Dimensions: 11 feet north-south by 7 1/2 feet east-west by 1-3 feet high above grade.

Drawings: 424/25000, Sheets 1 and 15.

Photographs: 424/25000, Sheet 90.

HS 050 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. Two parallel walls are evident. The stones are undressed, uncoursed granitic rock originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service removed a small amount of deteriorated adobes from the southern wall, replaced it with soil-cement adobes, and pointed it with soil-cement mortar. In 1978, the soil-cement adobes were removed and not replaced.

HS 051
Unidentified

Dimensions: 10 feet north-south by 10 feet east-west by 1 foot 4 inches wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 052
Unidentified

Dimensions: 28 feet long (total) by 1 foot 6 inches wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 053
Unidentified

Dimensions: 8 feet north-south by 11 feet east-west. Remaining walls are 1 foot 7 inches wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 051, 052, and 053 are the stone remains of structures built by the U.S. Military. The construction dates are not documented. The stones are undressed, uncoursed limestone. The stones of 051 and 052 were originally laid with lime mortar. The historic mortar of 053 is not evident or recorded. No plaster is evident.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 054
Unidentified

Dimensions: 13 feet north-south by 14 1/2 feet east-west by 1 foot high above interior grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 054 is the adobe and stone remains of a structure built by the U.S. Military. The construction date is not documented. Historic adobe is a deteriorated and unstabilized layer along the south wall. Stone remains are undressed, uncoursed limestone originally laid with lime mortar. Historic lime plaster is evident at grade along the south wall.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 055
Unidentified

Dimensions: 10 feet north-south by 10 feet east-west by 1-3 feet high above grade.

Drawings: 424/25000, Sheets 1 and 14.

Photographs: 424/25000, Sheet 89.

HS 055 is the adobe and stone remains of a structure built by the U.S. Military. The construction date is not documented. A small mound of deteriorated historic adobe and historic stone and non-historic soil-cement adobe foundations are evident. Historic adobes were laid with soil mortar. The stones are undressed, uncoursed limestone originally laid with lime mortar. No plaster is evident.

In 1967, the National Park Service added a soil-cement cap to historic adobes, pointed and relaid historic stone with soil-cement mortar and stabilized historic stone foundations by adding a new soil-cement foundation wall below historic stonework. In 1978, the soil-cement cap on historic adobe was removed and replaced with a cap of unamended mud.

HS 056
Unidentified

Dimensions: 9 feet north-south by 9 feet east-west by 3 feet high above interior grade.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 056 is the stone remains of a structure built by the U.S. Military. The construction date is not recorded. The stones are undressed, uncoursed limestone. Historic mortar is not documented. No plaster is evident.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 057
Wall

Dimensions: 13 feet long by 1 foot wide by 1-3 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 057 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. One wall is evident.

The stones are undressed, uncoursed granitic and limestone rock. The wall is drylaid. No plaster is evident. The structure is unexcavated and unstabilized.

HS 058
Wall

Dimensions: 135 feet long (total) by 1 foot 6 inches wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 058 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. Two walls are evident. The stones are undressed, uncoursed limestone. The historic mortar is not recorded. No plaster is evident. The structure is unexcavated and unstabilized.

HS 059
Wall

Dimensions: 47 feet long by 2 feet 1 inch wide by 1 1/2 - 2 1/2 feet high above grade.

Drawings: 424/27001 (HABS - HS 059 is the detached wall at the north-western corner of HS 025) and 424/25000, Sheet 1.

Photographs: VI. this report.

HS 060
Wall

Dimensions: 29 feet long by 1 foot 7 inches wide by 2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 061
Wall

Dimensions: 13 feet long by 1 foot 5 inches wide by 2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 062
Wall

Dimensions: 22 1/2 feet long by 1 foot 4 inches wide by 2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 059, 060, 061, and 062 are the stone remains of structures built by the U.S. Military. The construction dates are not documented. One wall of each structure is evident. The stones are undressed, uncoursed granitic and limestone rock originally laid with lime mortar. No plaster is evident. The structures are unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 063
Wall

Dimensions: 17 1/2 feet long by 1 foot 8 inches wide by 2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 063 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. One wall is evident. The stones are undressed, uncoursed limestone originally laid with lime mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 064
Wall

Dimensions: 52 feet long by 1 foot 11 inches wide by 2 1/2 feet high above grade.

Drawings: 424/27009 (HABS - The eastern end of HS 064 is shown along the west wall of HS 008) and 424/25000, Sheet 1.

Photographs: VI. this report.

HS 065
Wall

Dimensions: 170 feet long by 1 foot 8 inches wide by 1-3 feet high above grade.

Drawings: 424/27009 (HABS - The eastern end of HS 065 is shown along the west wall of HS 008) and 424/25000, Sheet 1.

Photographs: VI. this report.

HS 064 and 065 are the stone remains of structures built by the U.S. Military. The construction dates are not documented. One wall is evident for each structure. The stones are undressed, uncoursed granitic and limestone rock originally laid with lime mortar. No plaster is evident. The structures are unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 066
Wall

Dimensions: 40 feet long by 1 foot 7 inches wide by 1-2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 066 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. One wall is evident. The stones are undressed, uncoursed limestone rock originally laid with lime mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 067
Wall

Dimensions: 20 feet long by 1 foot 6 inches wide by 2-5 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 067 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. One wall is evident. The stones are undressed, uncoursed limestone and drylaid. No plaster is evident. The structure is unexcavated and unstabilized.

HS 068
Reservoir

Dimensions: 25 feet north-south by 18 feet east-west by 7 feet high above interior grade.

Drawings: 424/25000, Sheets 1 and 19.

Photographs: VI. this report.

HS 068 is the stone and brick remains of a structure built by the U.S. Military in 1885. The stones are undressed, uncoursed limestone originally laid with lime mortar. Historic brick in lime mortar is evident at the top of the north wall. Interior lime plaster is evident.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar, and edged and patched historic plaster with portland cement.

HS 069
Reservoir

Dimensions: 12 1/2 feet north-south by 70 feet east-west by 8 feet high above interior grade.

Drawings: 424/25000, Sheets 1 and 19.

Photographs: VI. this report.

HS 070
Unidentified

Dimensions: 15 feet north-south by 13 feet east-west by 1-5 feet high above grade.

Drawings: 424/25000, Sheets 1 and 19.

Photographs: VI. this report.

HS 071
Reservoir - Ice Caves

Dimensions: 53 feet north-south by 20 feet east-west by 10 feet high above interior grade.

Drawings: 424/25000, Sheets 1 and 19.

Photographs: VI. this report.

HS 069, 070, and 071 are the stone and metal remains of structures built by the U.S. Military in 1885. The stones are undressed,

uncoursed limestone originally laid with lime mortar. The metal remains of 069 are fragments of historic pipes embedded in the walls between chambers. The metal remains of 070 are two lengths of historic pipes at the base of the west wall. The metal remains of 071 are historic pipes and other historic metal fragments embedded in the walls throughout the structure. Interior lime plaster is evident in each structure.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar, and edged and patched historic plaster with portland cement.

HS 072
Unidentified

Dimensions: 1-inch diameter by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 072 is the metal remains of a structure built by the U.S. Military. The construction date is not documented. The only evident feature is a metal rod which is hooked at the top and set with molten metal into natural bedrock. The feature is unaltered since acquisition by the National Park Service.

HS 073
Unidentified

Dimensions: 34 feet north-south by 5 1/2 feet east-west by 1-2 feet above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 073 is the stone and metal remains of a structure built by the U.S. Military. The construction date is not documented. Two parallel troughs and five 1/2-inch diameter threaded metal rods are evident. The stones are undressed, uncoursed limestone originally laid with lime mortar. Historic lime plaster on the interior of the troughs is stained or painted dark red.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 074
Unidentified

Drawings: 424/25000, Sheet 1.

Photographs: Photograph 44745, collection of Arizona Historical Society, Tucson, Arizona (not included in this report), and VI. this report.

HS 074 is the subgrade remains of at least two structures. The builder and construction dates are not documented. No building features are evident above grade. The site is unexcavated and unaltered. Evident at grade are a stone fire ring (?) and small drylaid stone diversion dams across washes. The site was located by compass sighting and ground survey after evidence in the 1893 Owen Wister photograph cited above.

The structure or structures at this site are unexcavated and unstabilized.

HS 075
Unidentified

Dimensions: 20 feet north-south by 30 feet east-west.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 075 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. Some limestone foundation stones are evident at grade, but most of the structure is subgrade. The structure is unexcavated and unstabilized.

HS 076
Unidentified

Dimensions: 8 feet north-south by 10 feet east-west.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 076 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. Three walls of a structure which abuts HS 069 are evident at grade. The stones are undressed granitic and limestone rock. No historic mortar is evident or recorded. No plaster is evident. The structure is unexcavated and unstabilized.

HS 077
Wall

Dimensions: 46 feet long by 2 feet 2 inches wide at grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 078
Wall

Dimensions: 70 feet long by approximately 2 feet wide at grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 077 and 078 are the stone remains of structures built by the U.S. Military. The construction dates are not documented. One wall is evident for each structure. The stones are undressed, uncoursed granitic and limestone rock. The historic mortar is not recorded. No plaster is evident. The structures are unexcavated and unstabilized.

HS 101
Unidentified

Dimensions: 74 feet north-south by 40 feet east-west. Adobe remains are 1-3 feet high above stone foundation walls which are 1-3 feet high above grade.

Drawings: 424/25000, Sheets 1, 2, and 20.

Photographs: 424/25000, Sheets 91-93.

HS 101 is the adobe and stone remains of a structure built during or after 1862; the exact construction date is not documented. Historic adobes were laid with soil mortar. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident.

In 1967, the National Park Service partially excavated the structure, added soil-cement caps to historic adobe and pointed and relaid historic stonework with soil-cement mortar. In 1978, most soil-cement adobe materials were removed and historic adobes were capped and voids were filled with unamended mud.

HS 102
Unidentified

Dimensions: 13 1/2 feet north-south by 11 feet east-west by 2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 20.

Photographs: VI. this report.

HS 102 is the stone remains of a structure built during or after 1862; the exact construction date is not documented. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 103
Unidentified

Dimensions: 11 feet north-south by 2 feet 2 inches wide.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 103 is the stone remains of a structure built during or after 1862; the exact construction date is not documented. One wall is evident. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 104
Unidentified

Dimensions: 38 feet north-south by 34 feet east-west by 1-2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 105
Unidentified

Dimensions: 70 feet north-south by 17 feet east-west by 3-5 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 104 and 105 are the stone remains of structures built during or after 1862; the exact construction dates are not documented. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structures are unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 106
Unidentified

Dimensions: 69 feet north-south by 21 feet east-west. Adobe remains are 1-2 feet high above stone foundation walls which are approximately 1 foot high above grade.

Drawings: 424/25000, Sheets 1 and 3.

Photographs: 424/25000, Sheets 94-96.

HS 106 is the adobe and stone remains of a structure built during or after 1862; the exact construction date is not documented. Historic adobes were laid with soil mortar. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident.

In 1967, the National Park Service partially excavated the structure, added soil-cement caps to historic adobe and pointed and relaid historic stonework with soil-cement mortar. In 1978, most soil-cement adobe materials were removed and historic adobes were capped and voids filled with unamended mud.

HS 107
Unidentified

Dimensions: 30 feet north-south by 18 feet east-west by 3 feet high above grade.

Drawings: 424/25000, Sheets 1 and 20.

Photographs: VI. this report.

HS 107 is the stone remains of a structure built during or after 1862; the exact construction date is not documented. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 108
Unidentified

Dimensions: 27 feet north-south by 17 feet east-west by 0-2 feet high above grade.

Drawings: 424/25000, Sheet 97.

Photographs: 424/25000, Sheet 97.

HS 108 is the adobe and stone remains of a structure built by the U.S. Military during or after 1862; the exact construction date is not documented. Historic adobes are an arch-shaped area of paving slightly below existing grade. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident.

In 1967, the National Park Service laid soil-cement adobe on top of historic paving and pointed and relaid historic stonework with soil-cement mortar.

HS 109
Unidentified

Dimensions: 11 feet north-south by 26 1/2 feet east-west by 2 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 109 is the stone remains of a structure built during or after 1862; the exact construction date is not documented. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 110
Unidentified

Dimensions: 6 feet north-south by 15 feet east-west by 1 foot high above grade.

Drawings: 424/25000, Sheets 1 and 20.

Photographs: VI. this report.

HS 111
Unidentified

Dimensions: 10 feet north-south by 24 feet east-west by 1-2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 20.

Photographs: VI. this report.

HS 112
Unidentified

Dimensions: 27 feet north-south by 33 feet east-west by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 113
Unidentified

Dimensions: 15 feet north-south by 16 feet east-west by 1 foot high above grade.

Drawings: 424/25000, Sheets 1 and 21.

Photographs: VI. this report.

HS 114
Unidentified

Dimensions: 16 feet north-south by 7 feet east-west by 2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 21.

Photographs: VI. this report.

HS 115
Unidentified

Dimensions: 18 feet north-south by 14 feet east-west by 1 foot high above grade.

Drawings: 424/25000, Sheets 1 and 115.

Photographs: VI. this report.

HS 110, 111, 112, 113, 114, and 115 are the stone remains of structures built during or after 1862; the exact construction dates are not documented. The stones of each structure are undressed, uncoursed granitic rock. The masonry of HS 110, 111, 114, and 115 was originally laid with soil mortar. No historic mortar is evident or recorded for HS 112 and 113. No plaster is evident. The structures are unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 116
Unidentified

Dimensions: 22 feet north-south by 18 feet east-west by 1-2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 21.

Photographs: VI. this report.

HS 116 is the adobe and stone remains of a structure built during or after 1862; the construction date is not documented. Historic adobe remains were removed by the National Park Service in 1967 and replaced with soil-cement adobes which were removed in 1978 and not replaced. The stones are undressed, uncoursed granitic and limestone rock. The historic mortar is not recorded. No plaster is evident.

In 1967, the National Park Service partially excavated the structure and pointed and relaid historic stonework with soil-cement mortar.

HS 150
Unidentified

Dimensions: 52 feet long (total) by 1-3 feet wide by 1 foot high above grade.

Drawings: 424/25000, Sheets 1 and 21.

Photographs: VI. this report.

HS 150 is the stone remains of a structure built during or after 1862 by the U.S. Military. The exact construction date is not documented. Two walls are evident. The stones are undressed, uncoursed granitic rock. The historic mortar is not recorded. No plaster is evident. The structure is unexcavated. In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 151
Unidentified

Dimensions: 20 feet north-south by 7 feet east-west by 2-3 feet high above grade.

Drawings: 424/25000, Sheets 1 and 21.

Photographs: VI. this report.

HS 151 is the stone remains of a structure built during or after 1862; the exact construction date is not documented. One wall is evident. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 152
Unidentified

Dimensions: 22 feet long (total) by 1 1/2 feet wide by 1 1/2 feet high above grade.

Drawings: 424/25000. Sheet 1.

Photographs: VI. this report.

HS 152 is the stone remains of a structure built by the U.S. Military during or after 1862. The construction date is not documented. Two walls are evident. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 153
Unidentified

Dimensions: 26 feet long by 1 1/2 feet wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 153 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. One wall is evident. The stones are undressed, uncoursed granitic rock. The historic mortar is not recorded. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 154
Unidentified

Dimensions: 19 feet long (total) by 1 1/2 feet wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 154 is the stone remains of a structure built by the U.S. Military. The construction date is not documented. Two walls are evident. The stones are undressed, uncoursed granitic and limestone rock. The historic mortar is not recorded. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 200
Unidentified

Dimensions: 26 1/2 feet north-south by 13 feet east-west by 1-3 feet high above grade.

Drawings: 424/25000, Sheets 1 and 22.

Photographs: VI. this report.

HS 200 is the stone remains of a structure by an unrecorded builder. The construction date is not documented. The stones are undressed, uncoursed granitic rock originally laid with soil mortar. No plaster is evident. The structure is unexcavated.

In 1967, the National Park Service pointed and relaid historic stonework with soil-cement mortar.

HS 201
Wall

Dimensions: 19 feet long by 1-2 feet wide by 3 feet high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 201 is the stone remains of a structure by an unrecorded builder. The construction date is not documented. One wall is evident. The stones are undressed, uncoursed granitic rock. The wall is drylaid. No plaster is evident. The structure is unexcavated and unstabilized.

HS 202
Butterfield Stage Station

Dimensions: 39 1/2 feet north-south by 85 feet east-west by 1-2 feet high above grade.

Drawings: 424/25000, Sheets 1 and 22.

Photographs: VI. this report.

HS 202 is the stone remains of a structure built by the Butterfield Overland Mail Company in 1858. The stones are undressed, uncoursed granitic rock. The historic mortar is not recorded. No plaster is evident.

In 1967, the National Park Service partially excavated the structure and pointed and relaid historic stonework with soil-cement mortar.

HS 203
Butterfield Trail

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 203 is the remains of a road built by the Butterfield Overland Mail Company in 1858. The remains include the route itself, stone embankments built to level the road, and stone abutments (much less prominent than HS 204) of bridges built across some washes. The trail is marked with non-historic posts. Approximately 2 3/4 miles of the historic trail are within the Park boundaries. The trail is unexcavated and unstabilized.

HS 204
Butterfield Trail bridge abutments

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 204 is the remains of a bridge built by the Butterfield Overland Mail Company in 1858. Four stone abutments are evident, approximately 1-2 feet high above grade. The features are unexcavated and unstabilized.

HS 205
Cemetery

Dimensions: (1884) 190 feet north-south by 140 feet east-west.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 205 is the stone, earth, and wood remains of a cemetery built by the U.S. Military after 1862. Two historic wooden headboards, two stone grave markers, stone walls around one grave, stone perimeter walls, and two non-historic wooden headboards are evident. The remains of the perimeter wall are stones at grade. The wall around one grave is approximately 1 foot high above grade. No historic mortar is evident or recorded. The perimeter wall is unexcavated and unstabilized.

Since 1967, the National Park Service has pointed and relaid the wall around one grave and erected headboards patterned after two evident in historic photographs.

HS 206
Unidentified

Dimensions: 16 feet north-south by 21 1/2 feet east-west by 6 feet high above interior grade.

Drawings: 424/25000, Sheets 1 and 22.

Photographs: VI. this report.

HS 206 is the stone remains of a structure built by the Apache Pass Mining Company at the site of the Anderson Steam Quartz Mill ca. 1869. The mill was in operation until 1877. The stones are undressed, uncoursed granitic and limestone rock originally laid with lime mortar. Interior lime plaster is evident.

In 1967, the National Park Service used cement plaster to point and relay historic stone and to patch historic plaster.

HS 207
Wall

Dimensions: 10 feet long (total) by 1 1/2 feet wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 208
Wall

Dimensions: 10 feet long (total) by 1 1/2 feet wide by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 207 and 208 are the stone remains of structures probably built by the Apache Pass Mining Company at the site of the Anderson Steam Quartz Mill ca. 1869. The mill was in operation until 1877. One wall is evident for each structure. The stones are undressed, uncoursed granitic rock. The historic mortar is not recorded. No plaster is evident. The structures are unexcavated and unstabilized.

HS 209
Unidentified

Drawings: 424/25000, Sheet 1.

Photographs: No photographs are included in this report.

HS 210
Unidentified

Dimensions: 6 feet north-south by 10 feet east-west.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 209 and 210 are the subgrade remains of structures probably built by the Apache Pass Mining Company at the site of the Anderson Steam Quartz Mill ca. 1869. The mill was in operation until 1877. No features are evident above grade for HS 209. Some stones are evident at grade for HS 210. The structures are unexcavated and unstabilized.

HS 211
Unidentified

Dimensions: 12 1/2 feet north-south by 10 feet east-west by 1 foot high above grade.

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 211 is the stone and metal remains of a structure by an unrecorded builder. The construction date is not documented. The stones are undressed, uncoursed granitic and limestone rock originally laid with cement mortar. Metal remains are two lengths of pipe embedded in the walls. No plaster is evident. The structure is unexcavated and unstabilized since acquisition by the National Park Service.

HS 212
Unidentified

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 212 is the stone remains of a structure by an unrecorded builder. The construction date is not documented. Several walls approximately 1-2 feet high are evident above grade. The stones are undressed, uncoursed granitic rock originally drylaid. No plaster is evident. The structure is unexcavated and unstabilized.

HS 213
Quartz mine operations

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 213 is the ruined remains of late 19th or early 20th century gold mining operations. The mining area within the park boundaries includes a horizontal mine shaft, shallow prospect holes, tailings, the ruins of a residence(?), deteriorated furnishings, unidentified fragments, and the remains of low rock walls built to stabilize mining roads. All structures are unaltered and unstabilized, but probably disturbed since acquisition by the National Park Service. There is continuing grazing and mining activity in the vicinity.

HS 214
Dam

Drawings: 424/25000, Sheet 1.

Photographs: VI. this report.

HS 214 is one of three stone and concrete dams built in Willow Gulch. HS 214 is the one dam within Park boundaries. From evidence of the concrete, the dam was constructed in the early 20th century. The dam is a single bowed wall, approximately 30 feet long across the wash. Stone remains are approximately 2 feet high above grade. The stones are undressed, uncoursed granitic rock laid with cement mortar. No plaster is evident. The structure is undisturbed since acquisition by the National Park Service.

D. Stabilization of Above-grade Adobe Ruins

1. Early proposals

Fort Bowie was declared a national historic site in 1964, but proposals for federal protection of the area were made as early as 1939. In June of that year, the Southwest Regional Historian, Aubrey Neasham, and the Southwest Regional Director, Hillery Tolson, submitted a "special report covering the proposed Fort Bowie National Monument" (USNPS, 1939). Along with two historical narratives, details of who owned the land around the ruins and its value, etc., the report included topics such as condition, care, and preservation possibilities:

"C. Condition

Fort Bowie is now in ruins. Abandoned for over 50 years, it has gradually deteriorated, until today it consists largely of roofless adobe and stone walls, mounds, and fills. No attempt had been made to repair, stabilize, preserve, restore, or reconstruct the original structures.

D. Care

While occupied by the United States Army, Fort Bowie received excellent care. Since its abandonment in the late 1800's, however, there has been little attention paid to its care or condition. In the future, if established as a national monument, this site will again receive care adequate for its preservation. Should it remain in private hands and uncared for, it will deteriorate further, as so many other historic structures have in the past.

F. Possibility of Preservation

It is recommended that Fort Bowie be established as a national monument by Presidential proclamation. Once having acquired title to the property, every attempt should be made to preserve the remains of the historic fort. Technicians of the National Park Service should make a thorough study of the site with a view to preserving and developing the area in conformity with its past history and future possibilities. A CCC camp should be established there to build necessary approach roads, clean up the premises, stabilize the ruins, and build the proper administrative, living, and exhibit buildings. No attempt should be made to open the area to the public, however, until

the site is adequately preserved and the development work is finished. When ready, the tourist should be encouraged to travel to this national monument, where he may see for himself the setting of this famous fort. Properly preserved, it would add to the culture and pleasure of the American people, portraying, as it does, one more phase of the formative days of the American period in the far West."

Most significant in this report is the early emphasis on preservation as the most appropriate treatment - preservation of the ruins in their present condition. Secondly, the photographs included at the end of the report show that much more historic fabric disappeared in the first 45 years since abandonment than in the 40 years since 1939.

In 1957, a "Field Investigation Report, Fort Bowie, Arizona," (USNPS, 1957) was prepared by Leslie Arnberger for the Region Three (Southwest) Office of the National Park Service. The report is for the most part a land acquisition summary, but one paragraph in the Summary Section mentions work on the ruins:

Several problems would confront the Service should Fort Bowie be added to the National Park System. The fact that the fort is now in ruins would make it difficult for many visitors to visualize the dramatic events which took place there. This could be alleviated by partial or complete restoration of some of the buildings, but would primarily have to be overcome by outstanding interpretation and museum facilities.

This statement is the only written record that mentions restoration as a possible treatment.

In 1959, "A Proposal for the Preservation of Fort Bowie, Arizona" was "Prepared for the Consideration of the Fort Bowie Landowners by the National Park Service, Region Three Office, Santa Fe, New Mexico" (USNPS, 1959). The report summarized all land acquisition efforts since 1939:

The fort was actively considered for National Monument status more than 20 years ago. In fact, if it had not been for the interference of World War II, it is possible that Fort Bowie would now (1959) be a unit of the National Park System.

The report details the status of all desirable property, what would be under the jurisdiction of the National Park Service and how the area would be developed by the Federal government. In the section "Proposed Operation of the Fort Bowie National Historic Site," preservation is again emphasized:

The ruins of the fort would be stabilized to preserve their present appearance. Restoration of the buildings is not contemplated.

The bill to establish the area as a national historic site was first submitted to Congress on February 4, 1959, by Senator Barry

Goldwater of Arizona. Six years of negotiations with private landowners followed. In early 1964, acquisition of the appropriate land seemed possible. On February 27, 1964, hearings before the subcommittee on National Parks of the Committee on Interior and Insular Affairs concerning H.R. 946, "To authorize the establishment of the Fort Bowie National Historic Site in the State of Arizona, and for other Purposes," again emphasized preservation. From the statement of Morris K. Udall (Congressman from Arizona):

Only very limited restoration work is envisioned. The idea is to preserve Fort Bowie as it is, not to rebuild it.

From testimony of National Park Service Assistant Director Jackson Price:

Mr. Taylor (Congressman from North Carolina). "Just one question. I notice the fort was abandoned back in 1894. How much of the original structure is there?"

Mr. Price. "The remains of about 40 structures which are scattered around in the area of the fort, which is right here, and as I point out, these are identifiable from photographs that we have, taken back in 1890. So we know which are the guard's barracks, which is the settler's !sic1 store, and which is this and that, and we plan to stabilize these adobe walls and foundations and preserve them for display and interpretation to the public."

Mr. Taylor. "Do you plan to restore some of the buildings that have been destroyed?"

Mr. Price. "No, sir."

On August 30, 1964, Congress authorized "the establishment of Fort Bowie National Historic Site . . . for preservation (of) the site and remaining historic structures of old Fort Bowie . . ." (78 Stat. 681).

In February of 1965, a report titled "Fort Bowie National Historic Site - A Preliminary Plan" (USNPS, 1965) was prepared by the Southwest Regional Office of the National Park Service as a master plan proposal. The report describes visitor use and modern development of the area, and some strong preservation ideas:

. . . he (the visitor) looks down upon the natural amphitheater containing the ruins of Fort Bowie. Stabilized and sufficiently cleaned so that they are prominently in view, the ruins yet convey a sense of desertion. Remains of some 40 buildings--ravaged by time, forsaken by their long-dead builders--stand silently in the sun. Cloud shadows sweep across the valley, and the broken mass of Bowie Mountain looms over all.

The report continues elsewhere in the same tone:

Now that he (the visitor) has entered the ruins, he is struck by their extent. Stabilization and clean-up of the ruins has lifted them out of the debris and drift of a century, but has not manicured or domesticated them. They are ruins. They conjure up the howl of the coyote, not the put-put of the power mower. The atmosphere, contrary to fact, is light on preservation and maintenance, heavy on abandonment. Discreet thinning of mesquite in the parade, leveling, excavation, etc., gives the visitor a good view, but does not destroy the sense of the desert's reconquest, or the temporality of man's occupation here.

In a Precepts for Management section, the second precept re-emphasizes the importance of an abandoned-looking area:

Precept #2: The historic sites and structures will more effectively serve their purpose if they are not restored but are stabilized to maintain a ruins scene. Let them retain the atmosphere of abandonment, of desertion.

a. Stabilize and clear them enough of vegetation to remove the debris and drift of a century, but do not manicure or domesticate them. They are ruins.

By 1965 the use of soil-cement and chemical preservatives had nearly been decided. The Project Construction Proposal for 1965 (USNPS, Files-DSC) included estimates for stabilization materials:

All other supplies, materials, services, and equipment including cost of high-priced preservatives; cement, mortar color, possible commercial purchase of adobe bricks (or manufacture of soil-cement bricks at the site) . . .

(A similar proposal was prepared in 1966, with no change in the proposed work (USNPS, Files-DSC). Although the 1965 proposal was the first for actual work at Fort Bowie, it was probably the 1966 proposal which received funding.)

Also in 1965, the "Report of Committee to Review Western Forts' Interpretative Development Programs" (USNPS, 1965) recommended strict preservation of the ruins and alteration of the site similar to the master plan proposal of February of that year (USNPS, 1965). The report includes reviews of the restoration-reconstruction plans, furnishing plans and master plan recommendations of seven western forts: Forts Laramie, Larned, Union, Bowie, Davis and Smith, and Bent's Old Fort. Development had not begun at Fort Bowie when the report was prepared. The report recommends that preservation of Fort Bowie should follow the pattern of Fort Union and the recommendations of the Fort Bowie master plan proposal:

Stabilization of Ruins and Cleanup of Fort Site

There has already been prepared by Gordon Vivian and his associates of the Globe (now Western) Archeological Center a comprehensive study of the ruins stabilization program needed at Fort Bowie. A catalogue of building sites has been prepared and most of the features in the fort area identified by location. There is to be no restoration or reconstruction. In general, the treatment of Fort Bowie will be similar to that carried out at Fort Union in New Mexico.

(The Gordon Vivian study prepared prior to the Committee report must have been one of the planning documents for the 1967 stabilization work. The study has not been found.)

Here the problem may be even more difficult because the disintegration of the ruins has proceeded further than at Fort Union. A 3-year program of ruins stabilization has been projected at a cost of about \$90,000, or \$30,000 a year. The 1967 F.Y. program carries \$17,000 for ruins stabilization work at Fort Bowie, but actually doing it depends upon land acquisition. In any event, ruins stabilization will be in good hands with supervision being given by the Globe Archeological Center.

There was a difference of opinion among the Committee as to the extent of cleanup of scrub oak and other low growth that has developed all over the fort area, in many places obscuring or even hiding ruins. Appleman was of the opinion that the cleanup should be complete, with all growth removed, in the manner of the treatment of Fort Union. There was a general opposition to this viewpoint from the other members of the Committee, most of them favoring the retention of a considerable amount of the growth. They thought it would lend atmosphere and a touch of abandoned wild ruins to the scene. Regional Historian Bill Brown from the Southwest Office and Coordinating Superintendent Ray Ringenbach joined in this view.

Appleman commented that most of the growth would have to be removed, he believed, in the course of the ruins stabilization work, and that the retention of growth in many places would endanger stabilization of walls. The ultimate decision on this, it was understood, would necessarily rest in large part on the ruins stabilization work, and that if approved stabilization practice in any instance called for the removal of growth, then it should be removed.

In August of 1966, the ruins had not been stabilized and Bill Brown, Southwest Regional Historian, thought that some emergency stabilization work was necessary. In a memorandum to the Superintendent at Chiricahua National Monument, Brown describes a procedure:

In a conversation with Charlie Pope (Historical Architect in the National Park Service's Western Office of Design and Construction) just now concerning an aerial index map of the Fort Bowie ruins (a copy of which he will soon send to you) I told him of the deep undercutting of the walls that I noticed at the Sutler's Store ruins two weeks ago. Charlie suggested that if you consider it feasible or if you could get permission from the range foreman you should proceed immediately with day labor or with the staff that you have on hand to tamp dirt and rubble into these undercut holes so that the walls do not topple. This would seem to be an immediate constructive or at least antidestructive move anticipating later systematic stabilization by the RSU (Ruins Stabilization Unit) team. Charlie suggested that before this tamping takes place a record photo should be made of the hole and then after the tamping a record photo of the aftermath of the work.

If this does seem like a reasonable emergency measure please go ahead and do it. If on the other hand there are complications such as your relationship to the landowner, etc., that would make it a touchy issue for you, please let us know and we might be able to come up with some solution.

P.S. I just checked with Charlie Steen on the best technique for this filling of the undercuts. He says use mud only--throw it in and tamp it in as hard and as far as possible (without knocking over the walls) and after it has dried for 10 or 12 hours come back and push it in again as hard as it will go." (USNPS, Files-DSC)

Pope responded to the memorandum:

The P.S. on using mud is not right. A mud of clay will not give the tight support required. The purpose of adding some water and tamping the fill in place is to break down particles enough to fill voids. To add enough water to make mud is not right, for the water itself takes space and causes shrinkage when it evaporates. Too much water gives poor concrete for this same reason. In other words there are two reasons for not using mud. (USNPS, Files-DSC)

(There is no record that any stabilization using natural materials was completed prior to the 1967 soil-cement stabilization).

Initial Fort Bowie stabilization work was funded for fiscal years 1967 and 1968. At that time, there were questions concerning the preparation of the Architectural Data Section of the Historic Structure Report. In a memorandum to the Director of the National Park Service from the Superintendent of Chiricahua National Monument, dated February 16, 1967, Ray Ringenbach requested that the existing conditions drawings required prior to ruins stabilization work be waived:

To implement an orderly, systematic program of stabilization of the comprehensive type - rather than of the emergency type - is highly desirable. We assume that Part I of the Historic Structures Report has been approved but Part II has not been completed. Since Part II requires recording of the individual buildings we inquire whether approval of Part II can be waived in this instance so that work can proceed. The matter of recording the historic structures prior to stabilization can be done by extensive and complete photographs . . .

As you know from previous correspondence and personal knowledge the condition of some of the walls can be best described as precarious hence delay in initiating the work would be quite detrimental. Also, investigation of the salvage sites has to precede road development which is already programmed.

We do not want to jump the gun in any way but we believe it imperative that we start moving on the stabilization and carry it into the 1968 F.Y. (USNPS, Files-DSC)

However, for the very reason of "orderly, systematic" stabilization, the drawings were necessary. In March of 1967, the Superintendent of Chiricahua National Monument asked Historian Robert Utley when drawings of the ruins would be completed:

This is intended as an informal note to inquire whether your office has contracted for architectural drawings of the ruins structures at Fort Bowie?

Per your telephonic approval of a few weeks past, the plans are for SWAC (Southwest Archeological Center) to begin the stabilization work circa April 1. I do not know where the ruins stabilization will begin but it occurs to me that there might be a possibility they will have some buildings stabilized before 'this summer', hence any drawings after that might be of stabilized ruins rather than pre-stabilized ones? (Memorandum dated March 6, 1967. USNPS, Files-DSC)

In the same memorandum, Ringenbach recorded that the grazing which largely deteriorated the structures since military abandonment, was still a cause of deterioration:

P.S. Neel's cows have kicked hell out of some of the ruins but we hope to alleviate that situation by fencing off as soon as SWAC gets on the job.

2. Stabilization work completed, 1967-1977

The Historic American Buildings Survey (HABS) and the soil-cement stabilization of the ruins began in 1967 and continued simultaneously. The HABS drawings were completed under contract with Gordon Heck, AIA, of the University of Arizona, Tucson, by March of 1968. The nine structures recorded show various conditions. The HABS record of HS 008, 018, and 035 shows conditions prior to stabilization; HS

025, 026, and 036 are shown during stabilization; and HS 019, 032, and 033 are shown after stabilization. (The Fort Bowie HABS drawings are included in VII.A. this report).

In the spring of 1967, ruins stabilization and archeological salvage began at Fort Bowie. Under the supervision of Don Morris, archeologist at the Southwest (now Western) Archeological Center, soil-cement adobes were added to historic fabric, historic stones were repointed and relaid with soil-cement mortar, historic plaster was edged with soil-cement mortar, and fill and the accumulation of deteriorating adobes were removed from around walls. This work was recorded in Morris, 1967 and 1968. The soil-cement stabilization materials were described in "Ruins Stabilization in the Southwestern United States" (Richert, 1974):

6 parts local, well-graded soil (from borrow pits within the ruins areas; no location recorded)

1 part portland cement-color mixture (tinted cement mixed dry in the proportion of 1 sack (no weight recorded) portland cement: 1/4-1 pound coffee can 'Desert Tan' mortar color: 1/2-1 pound coffee can 'Sunset Orange' mortar color (no manufacturer specified for mortar colors)

The above formula resulted in a color called 'buff'. For a 'darker' color, 25 percent of the borrow pit soil was replaced with reddish clay (no source specified).

After soil-cement stabilization was completed, several attempts were made to chemically preserve historic and non-historic materials. Use of chemicals varied in extent and treatments, and in the way the treatments were recorded. The only record found of chemical treatments is a March 2, 1968 memorandum from Roland Reichert, Chief, Ruins Stabilization Unit, to the Chief of the Southwest (now Western) Archeological Center:

Attached for your review is a field trip report by Don Morris covering his examination of Fort Bowie on February 20.

You will note his discouraging remarks concerning the non-effectiveness of Pencapsula, and in some instances, the harmful results of this product.

Don Morris reported that chemical treatments accelerated deterioration:

I spent five hours at Fort Bowie on this date in the company of Historian Jon Montgomery reviewing the condition of stabilized adobe walls. Unfortunately, the general situation is discouraging; the Pencapsula application last fall has harmed the walls more than it has helped them. Walls at the first Fort which were not sprayed are in better condition than those which received Pencapsula. On all adobe walls examined, the 1/8" to 1/4" thickness that the Pencapsula had penetrated last

fall is cracking and flaking away from the wall. The hard surface which the Pencapsula had produced immediately after application is nowhere evident. Beneath this spalling, rotten layer many of the walls are extremely soft and wet. It seems evident that the Pencapsula has acted as an impervious coating which is not "breathing," producing the above condition.

The walls in the best condition are those with exposed masonry foundation; these foundations act as barriers to the upward wicking of water into the adobes. Even in these walls, the Pencapsula layer is deteriorating. This is just as true of building 37, a structure which received several coatings of Pencapsula, as it is of several structures which received only one coat.

It was agreed that historic adobe could not be waterproofed with 'Pencapsula'. Other waterproofing choices were included in the same memorandum from Don Morris:

The condition of the soil-cement cappings and plugs installed in the walls last summer is quite good even where the soil cement has been exposed to considerable moisture. In view of the unequivocal failure of Pencapsula at Fort Bowie, I would like to make the following recommendations:

- 1) Where possible, adobe walls should be excavated to expose at least one vertical foot of masonry foundation. If this cannot be done, the walls should be trenched, coated with mastic, and tile drains installed to carry away water from the walls.
- 2) Silicone compounds should be tested on selected portions of the adobe walls of the site to insure their suitability at Fort Bowie. Since silicones, while generally effective, do deteriorate, their reapplication at intervals of one to two years should be programmed.

The response from Roland Richert:

It is significant that adobe walls with above-grade stone masonry foundations have withstood moisture far better than others. This phenomenon, as I am sure most everyone here knows, can be explained by the fact that in those walls without foundations or without exposed foundations, moisture enters the adobe walls either by upward movement of capillary moisture or the outward movement through walls of moisture entrapped in fill areas.

I agree in the main with Don's recommendations with only minor exceptions, and should in turn, like to offer a few suggestions.

Experience has shown (see Handbook for Ruins Stabilization, Ch. 3) that maximum control of capillary moisture from entrapped fill and the rise of capillary moisture is achieved by

a combination of factors (1) sealing of the wall as effectively as possible from the moisture-bearing soil, (2) the maintenance of proper drainage and (3) the employment either of moisture resistant mortar or a sealant.

Therefore, I suggest that both sides of the walls affected by capillary moisture be trenched, one side at a time, to depths well below the levels of the eroded areas. In the case of walls without stone foundations, install replacement soil cement adobe bricks, plaster the surface, treat the cured surface with a sealer, then backfill and grade to drain. All adobes installed at subgrade levels need not be antiqued since they will be both concealed and plastered. Wherever the terrain and nature of the fill permit, it is suggested that perhaps somewhat greater exposure of the wall may be desirable, concomitant with this foundation work and the removal, replacement, and grading of fill.

In the case of walls with buried stone foundations, the same principle is involved except that here the foundation stones will be reset, grouted, or patched as required, then plastered and sealed, at all subgrade levels.

Don knows Fort Bowie like the palm of his hand, while I do not; but off-hand, I am not convinced that drain tiles would be necessary or effective except in cases where water drains broadside against a wall. Proper grading of fill to drain water away from the wall, following foundation and related wall work, would appear to me to be sufficient. It is true that the entire site slopes sharply south to north; and if there are areas of ponding against walls that cannot be remedied any other way, some strategically located tiles might be necessary. Further on-site study for the desirability of cutting, filling, and grading seems indicated. The reason we have tread lightly in this aspect is that excavations were to be held at a minimum.

Don Morris summarized the situation at Fort Bowie in the last two recommendations of his trip report:

4) We should recognize that the adobe walls at Fort Bowie constitute a first class maintenance nightmare. This site should be inspected at least yearly by us and the closest relations should be maintained with the on-site management of the area. Major repairs may be necessary at three to five year intervals.

5) A comprehensive program to develop suitable techniques of stabilizing adobe is badly needed; Pencapsula is not the answer.

Although there is no further documentation, at some time between 1968 and 1977 all walls with adobe extending below grade were trenched. The bases of the walls were plastered with cement and a concrete 'apron' 1-2 feet wide was laid 1-2 feet below grade. Then in 1971, the subgrade bases of some walls in HS 001, 003, 004-005, 010,

014-015, 018, 021, 025, 028, and 035 were treated with 'Adobeseal', a supposed waterproofing treatment. Seven hundred and fifty gallons were used to treat 729 linear feet of walls with a 1:50 ::chemical: water mixture. Daraweld amended cement and 'Warmtone', a colored cement plastering material, were also applied at that time.

And chemical treatment of the ruins continued. There is no further documentation of chemicals applied to above-grade historic fabric, but several applications are known to have been made with the assistance of area personnel. The applications included a diesel and liquid detergent mixture, silicone treatments, and applications of 'F-325', another waterproofing treatment.

Lastly, a photograph caption in Don Morris's trip report anticipated what was, by 1977, very pervasive--deterioration of historic fabric behind soil-cement materials:

Walls stabilized in a manner similar to the north wall of the corral of building 35, shown here, have survived the Penacapsula application and inclement weather conditions best. The masonry footing at the base of the wall is exposed, a factor which inhibits the wicking of moisture into the wall interior. Filling of a basal undercut with soil cement adobes also retards the flow of moisture into the wall. It does not completely stop moisture from entering, however.

3. Stabilization work completed, 1978

In 1977, most historic adobe fabric was covered with the non-historic soil-cement adobe materials added in 1967. Briefly, there were two reasons why some change of stabilization methods was desirable: 1) soil-cement materials encouraged erosion and soil-cement materials could not be maintained; 2) the appearance of the historic fabric was considerably altered by the addition of soil-cement materials. Alteration and continued erosion conflicted with the Fort Bowie Master Plan's interpretation concept of 'historical abandonment' (USNPS, 1975) and with the National Park Service Management Policies (USNPS, 1978).

In late summer of 1977, the Western Archeological Center requested architectural services from the Denver Service Center on behalf of Fort Bowie National Historic Site. After a site visit by historical architects from the Branch of Historic Architecture, Historic Preservation Division, Denver Service Center, a preservation proposal was developed which included the preparation of an Historic Structures Report, field supervision of stabilization work, and preparation of an Historic Structures Preservation Guide. The proposal was reviewed as adequate and preparation of this Historic Structures Report began. The following is excerpted from the proposal:

(August 1977)

"Memorandum

To: Chief, Cultural Properties Conservation (now Division of Adobe/Stone Conservation). Western Archeological Center

From: Associate Manager, Denver Service Center

Subject: Architectural Services Available from Branch of Historic Architecture, Historic Preservation Division, Denver Service Center for Fort Bowie National Historic Site

As requested by the Western Archeological Center (WAC), Historical Architect John Robbins, Branch of Historic Architecture, Historic Preservation Division, Denver Service Center (DSC), has prepared the following proposal, which is forwarded for your review:

From the Final Master Plan, November 1975, Fort Bowie National Historic Site:

MANAGING THE HISTORIC SITE

One of the most serious problems affecting management of Fort Bowie National Historic Site is the weather-caused deterioration of the remaining adobe structures; stabilization work to date has not been successful. Because the continued existence of these historic ruins is of key importance in the 'historical abandonment' concept of interpretation, first priority will be given to stabilization and preservation efforts. Cooperative research will continue between Park Service archeologists and interested staff of other agencies to determine an appropriate and effective method of long-term preservation of unroofed adobe walls.

From Chapter V, Historic Preservation, Management Policies of the National Park Service, U.S. Department of the Interior, dated April 1975:

Ruins

By definition, ruins are classified as historic structures and shall be accorded treatment as indicated herein for the several classes of historic structures. The preservation techniques designed to arrest further deterioration of ruins are encompassed by the term "ruins stabilization."

Ruins stabilization destroys basic historical data. Accordingly, appropriate research on the original fabric of a structure, conforming to Service research policies, must precede stabilization.

Ruins on unexcavated sites should be stabilized only to the extent necessary to preserve them for further investigation. Sites to be interpreted shall not be excavated until adequate provisions have been made for stabilization of the ruins as they are exposed. The deliberate creation of ruins out of whole structures is prohibited, as is the reconstruction of missing structures to portray them in a ruined state.

Historic Structures

. . . the preservation of a historic structure in its existing form shall always be given first consideration.

Preservation

A historic structure shall be preserved in its existing form on the basis of the following criteria:

1. The structure, upon acquisition, already possesses the integrity and authenticity required. . . .

At the time of acquisition, the interpretive theme and the condition of the structures existing at Fort Bowie National Historic Site were compatible: the Fort looked abandoned. Presently, the site is neither in the same condition as at the time of acquisition, nor in an evident state of abandonment. Moreover, deterioration is accelerating.

The intent of the 1967 work completed at Fort Bowie National Historic Site was ruins stabilization. The effect of the work, however, was that of partial restoration. "Before and after" photographs show that the ruins are larger and of altered texture and color following preservation. Roofed adobe structures within the Park System are said to be restored or reconstructed when visible changes are made. This work is generally directed by architects. Work on the roofless structures at Fort Bowie National Historic Site is called ruins stabilization. This work has been directed by archeologists. Again, to facilitate preservation of the ruins, there must be appropriate research on the original fabric of the structure, there must be an effort to preserve the form of the ruins as acquired, and the minimum restoration performed must be accurate, with a minimum of conjecture. A joint effort between the Western Archeological Center and the Denver Service Center can only serve to minimize conjecture, maximize the effects of existing and future preservation work, and eventually, to bring the ruins to a level of stabilization which requires only routine maintenance.

(The memorandum continued to detail the Historic Structures Report, field work and Historic Structure Preservation Guide requirements).

Following the proposal, a draft Historic Structures Report was prepared as part of the legislative compliance documentation. Existing conditions of the structures were described in general categories: the effects of non-historic stabilization materials on historic fabric, the extent of reconstruction, visual compatibility of historic and non-historic materials, the alteration of historic grade, and the condition of historic lime plaster. (The following paragraphs were first used in the draft Historic Structures Report.)

Beginning with the first stabilization work in 1967, the historic structures of Fort Bowie National Historic Site have been treated to the extent that the existing ruins do not closely resemble the ruins at the time of National Park Service acquisition. Some change in the ruins is the result of continuing natural deterioration, yet, as explained below, most change results from National Park Service stabilization and maintenance work.

Soil-cement adobe and portland cement patch are more durable than existing historic fabric. Soil-cement adobe has not noticeably eroded since installation, has retained a hard edge, and contrasts with the soft edge of eroded historic fabric. Soil-cement adobe is also less absorptive than historic adobe. Rainwater falling on soil-cement caps is not absorbed, but streams over the edges and undercuts the soil-cement cap at the interface between soil-cement adobe and historic fabric. Depending on the orientation of wall segments, erosion induced by soil-cement materials has resulted in undercutting 1/2-2 inches deep.

Portland cement used for plastering historic adobe, patching historic lime-plaster surfaces and sealing the edges of historic lime-plaster surfaces has a similar detrimental effect because of the different expansion and absorption characteristics of historic and non-historic materials. Cracks are evident between historic and non-historic materials even when non-historic portland cement edges have been feathered to increase bond. Such cracks, of course, admit moisture which deteriorates concealed historic fabric and induces further cracking.

Portland cement and Daraweld amended cement plasters on historic adobe lost their bond with historic adobe soon after application, although some non-historic plaster has remained in position. Moisture collecting behind non-historic plasters has deteriorated the concealed historic fabric.

The extent of reconstruction of each structure can be determined from the description of work and the "before and after" photographic records of the various Historic Structures Reports, stabilization reports, emergency stabilization reports and project completion reports which summarized or proposed work at Fort Bowie. All caps, veneers and basal erosion fills result in structures which are larger than at the time of acquisition. Some existing portions of structures are total reconstructions. As well, the arrangement of most soil-cement adobe has never been recorded as other than conjectural. Capping, veneer and basal erosion fill on walls with evident coursing are the least conjectural. Capping, veneer and fill on walls with little or no evidence of coursing

are more conjectural. Soil-cement adobes existing as portions of structures with little or no adobe evident at the time of acquisition approach pure conjecture. Therefore, no soil-cement adobe stabilized walls preserve the condition of the eroded adobe walls at the time of acquisition. Cutting soil-cement adobe into the soft rounded edges of historic fabric resulted in an unnatural, irregularly squared profile. Varying amounts of reconstruction of each structure resulted in variously altered profiles.

Historic and non-historic materials have not been visually compatible. Not all historic fabric is equally eroded. Existing historic adobe can be categorized as follows: walls with mortar softer than the adobe bricks, resulting in protruding bricks; walls with adobe bricks softer than the surrounding mortar, resulting in "honey-combing" when mortar protrudes beyond the face of adobe; and walls with mortar and adobe bricks of similar durability resulting in an equally eroded, somewhat smooth wall surface. The texture of historic fabric varies structure by structure, as well as varying within each structure. All existing non-historic soil-cement adobes, however, have the same surface texture and were laid with the same raked mortar joint, regardless of location. No non-historic adobe materials closely match the texture of adjacent historic fabric.

The coursing of soil-cement caps, veneer and basal erosion fill does not always conform to evidence or lack of evidence of historic coursing. Historic fabric which is eroded smoothly and now without any evidence of historic coursing has non-historic capping, veneer and fill with incompatibly evident adobe and adobe mortar texture and joint pattern. Historic fabric with evident historic coursing has portions of non-historic capping, veneer and fill which do not match the evident coursing of existing historic fabric.

Non-historic construction does not always conform with evidence of how the wall thicknesses were originally constructed. To make a wall fragment appear eroded to a rounded point at the top of the wall, a wythe of soil-cement adobe is often centered on the varying width of the wall below, along the length and ends of the wall. Such construction is incompatible with historic or reasonable coursing, and incompatible with evidence of characteristic adobe erosion seen throughout the Southwest and still evident in HS 011 and 012 at Fort Bowie.

No soil-cement brick or mortar, or portland cement patch matches the color of adjacent historic fabric. Some non-historic materials have been covered with a very thin mud plaster which more closely matched historic adobe. The thin plaster, however, continues to wash away or crack and fall away, exposing non-historic material beneath.

As part of the 1967 stabilization work, archeological investigations required excavation to determine the configuration, extent and use of each structure. Generally, soil removed during excavation was not replaced and, by comparison of "before and after" photographs in Morris, 1967, the change in grade elevations along walls can be detected simply, either by counting historic adobe courses or by measuring from other permanent features. In many cases, e.g., HS 018 and 035, low walls which were not evident or exposed to weathering prior to excavation have been excavated to the effect that the ruins are more extensive.

In all cases, the grade elevation around ruins has been altered.

Lime plaster is attached to the interior and exterior of some adobe wall remains. All plaster edges have been feathered to the historic fabric with a non-historic portland cement mixture with the same detrimental effects of non-historic stabilization on historic fabric as the effect of non-historic soil-cement stabilization materials on adjacent historic adobe. Some graffiti incised into historic lime plaster prior to acquisition have been filled with non-historic grout. The loss of historic graffiti may be largely irretrievable. This report makes no recommendations for any restoration of graffiti; recommendations are made only for the stabilization of lime-plaster, generally by removal of non-historic edging and possible attachment of historic plaster to adjacent historic adobe.

The draft historic structure report which was submitted for legislative compliance review included a summary of stabilization work completed at Fort Selden State Monument, New Mexico. Fort Selden was used as an example of adobe ruins which had been stabilized with amended materials which were subsequently removed and replaced with natural materials. The following chronology shows the parallel with Fort Bowie:

- 1865: A small cavalry post was established to protect settlers and to control the Apache Indians.
- 1879: Fort Selden was abandoned.
- 1880: Fort Selden was reactivated on Christmas Day. Some repairs were made using materials from one building to repair another.
- 1891: Fort Selden was abandoned permanently. The remaining troops were instructed to salvage any reusable materials. Local civilians helped in the dismantling for the price of taking whatever they wanted. Soon after abandonment, Fort Selden came under private ownership.
- 1963: After State acquisition, Fort Selden was established as a State Park and managed by the State Park and Recreation Commission.
- 1972: Management of Fort Selden was transferred to the Museum of New Mexico. The Museum consulted with the Arizona (now Western) Archeological Center concerning adobe stabilization techniques, particularly the 1967 work at Fort Bowie. Archeological excavation began in the spring and continued through the summer. Stabilization using Pencapsula-amended adobe materials was completed under the direction of Charlie Steen. Generally, amended adobe blocks were used on horizontal areas and amended adobe plaster was used on deteriorated vertical and sloped areas.

1974: Fort Selden was declared a New Mexico State Monument on July 2.

Restabilization using natural materials was completed under the direction of Tom Caperton. Generally, most amended adobe caps, plaster, and basal erosion fill were removed by working with a trowel along the joint between stabilized and historic materials and prying loose the stabilized material. Basal erosion areas were filled with natural adobe plaster, natural adobe blocks produced from an on-site source, or adobe blocks salvaged from a nearby derelict building. Some horizontal, vertical, and sloped areas which were actively deteriorating from weather, wind, continual cracking, or rodent and insect infestation were filled and covered with natural adobe plaster mix, generally slumped onto the historic fabric.

The interior areas of the ruins were graded into the center of the rooms, and the exterior areas were graded away from the walls, as well as graded level, interior to exterior, to prevent differential erosion.

Recent and Present: Stabilization work continues as it began in 1974. Areas are stabilized using natural adobe bricks or plaster as appropriate, depending on the extent of deterioration. Only actively deteriorating areas are stabilized during cyclic maintenance.

Results of the 1974 and continuing work at Fort Selden can be evaluated as follows: The color of the salvaged materials is not an exact match, but neither is the color of the adobe produced from the on-site source. Exact color match was not a concern during the 1974 work, nor has it been since. In all cases, the stabilization materials are slightly darker than the historic fabric. State Monuments hopes that continued fading over time will naturally result in a closer match. There is evidence that the stabilization materials applied in 1974 have faded since that time.

What does match very well, however, is the texture of historic and replacement adobe, new or salvaged, both when first installed and while weathering. There is no evidence of deterioration from differential erosion or lack of bonding, non-historic to historic. The stabilized adobe was removed because it looked artificial and encouraged erosion. After removing the stabilized adobe materials and replacing them with natural materials, the ruins better approximate their condition at acquisition and induced erosion has been slowed.

The closely parallel stabilization histories of Forts Bowie and Selden were unexpected. Both forts are approximately the same age and size -Fort Bowie began in 1962 and Fort Selden in 1865, and approximately 3,000 linear feet of historic adobe walls remain of each.

After review of the project by Regional, Western Archeological Center, and Denver Service Center personnel, a proposal

was prepared for legislative compliance of sampling historic fabric for matching and stabilizing a 'test' wall, with the understanding that if the test wall was successfully stabilized, then similar work would proceed on the balance on above-grade adobe ruins. The November, 1977 correspondence from Howard Chapman, Director, Western Region to Dorothy Hall, State Historic Preservation Officer for Arizona is included here, verbatim.

The National Park Service, Western Region, is preparing a program of comprehensive adobe ruins preservation at Fort Bowie National Historic Site, Cochise County, Arizona, a property on the National Register of Historic Places. The work is administered by the Western Archeological Center, Tucson.

Enclosed is the proposal for Materials Investigation and Initial Preservation work at Fort Bowie National Historic Site. The effects of this work are described in a step-by-step fashion as part of the proposal. Many of the steps as individually described would have an adverse effect on the resource. However, we view the overall effect of this preservation program as beneficial. The use of natural adobe preservation techniques after removal of soil cement materials is demonstrated by results at Fort Selden State Monument, Dona Ana County, New Mexico, to be an effective way to arrest adobe deterioration and maintain the condition of the ruins as they were when acquired by the National Park Service. The proposal details the use of natural adobe preservation methods for Fort Bowie, to responsibly preserve the area's resource.

The ruins at Fort Bowie are eroding rapidly. The proposed test work is scheduled to begin in the early spring of 1978 and, if the techniques tested are successful, work will begin on the remaining adobe resource. You will be kept informed of work progress.

In accordance with Section 106 of the National Historic Preservation Act of 1966 and the procedures of the Advisory Council on Historic Preservation, we request your review and comments on this undertaking.

Enclosed with the memorandum requesting concurrence that the proposed stabilization work was appropriate were two earlier memoranda. The first proposed materials investigation; the second detailed initial and continuing preservation work. Portions of both proposals are included here, verbatim. First is the September 7, 1977 memorandum from the Chief of the Western Archeological Center to the Director, Western Region, concerning materials investigation at Fort Bowie:

With overall preservation work in view, and in anticipation of the construction tasks described in the (draft) Historic Structures Report, this memorandum outlines the sampling and analysis of the historic and non-historic and materials of each structure necessary to formulating materials which will be

compatible with historic fabric when used in future preservation work.

Samples of historic fabric for analysis (historic adobe, mortar, and lime plaster) must be taken from each wall to determine the composition of discrete materials. The number of samples per material per wall will be three; one at each end and one in the middle, or where there are evident differences among the materials. Subsequent samples may be taken to determine the extent of variation.

Each sample taken will be approximately 100 cubic centimeters (a volume approximately 1 1/2 inch by 1 1/2 inch by 2 1/2 inches).

Each sample will be taken using the most appropriate techniques. An electric drill, a hand-coring device, or common hand tools will be employed as appropriate according to the condition of the material.

Analysis of all samples can provide information as follows: clay mineralogy, percentages of sand, silt and clay, sizing of sand fraction, pH, total amount of soluble salts, and color, as well as information about which structures or portions of structures have the same material composition.

Historic borrow pits will also be sampled to determine the origin of historic construction materials. Analyses of borrow pit materials and historic fabric would be used to determine an appropriate mix of commercial soils when fabricating new preservation materials.

All samples will be taken from locations both appropriate to the nature of the test and as least visible as possible.

The location of samples taken will be recorded and all holes resulting from sampling will be filled with the natural mud patch currently in use at the Park.

All samples taken below existing grade will be taken under the supervision of an archeologist. Analysis to determine the composition and other properties of historic and non-historic materials will be performed under the supervision of Dr. Dennis B. Fenn, Research Scientist, Western Archeological Center, and John Robbins, Historical Architect, Western Archeological Center.

The analysis of effect is as follows: The research work outlined above is part of a comprehensive research effort which is necessary prior to continuing preservation work. Photography and measured drawings, also part of the comprehensive research, were discussed previously with the State of Arizona Historic Preservation Officer, and determined to have no effect on the resource.

The research analyses described in this memorandum will have the effects of removing materials, especially historic material, and the visual intrusion of personnel taking samples, recording the position of samples, and patching of sample holes with non-historic material. These effects will be mitigated by future preservation efforts which will slow deterioration by using preservation materials which are compatible with the historic fabric. Destructive investigation of small portions of the resource at this time is necessary for future comprehensive preservation of the entire resource.

The second enclosure was an October 28, 1977 memorandum, also from the Chief of the Western Archeological Center to the Director, Western Region, concerning initial and continuing preservation work at Fort Bowie.

This memorandum supplements the memorandum on materials investigation dated September 7, 1977, a copy of which is enclosed. The September 7 memorandum proposed the sampling of historic materials in every wall prior to the formulation and application of appropriate stabilization materials. This memorandum, however, modifies the scope of materials investigation and also proposes that, initially, all materials investigation and anticipated stabilization work be performed on a single "test" wall selected from the historic above-grade adobe walls. Stabilization will proceed on all other above-grade adobe walls following evaluation of the "test" wall; initially, only a small portion of the resource will have been jeopardized.

The information that a "test" stabilization of an historic wall will not provide is the condition of natural adobe stabilization of Fort Selden, Dona Ana County, New Mexico, and is appended to this memorandum as a trip report.

Fort Selden is the ruin of a post contemporary with Fort Bowie and was natural-adobe stabilized three years ago under the direction of the Museum of New Mexico and is presently managed as a State monument. The trip report documents the feasibility, techniques and somewhat long-term effects of natural-adobe stabilization replacing amended adobe stabilization.

The work at Fort Bowie proposed for review is as follows: criteria for the selection of the "test" historic walls; identification of the "test" historic wall; materials sampling; soils survey, characterization, and mapping; procuring soils for manufacture of stabilization materials; criteria for removing non-historic material; methods for removing non-historic materials; methods for placing new stabilization materials; stabilization of historic lime plaster; and use of mud plaster to prevent deterioration.

1. Criteria for selection of the "test" historic wall: The wall selected must:

- a. not be the only extant remains of an historic structure,
 - b. be among the Fort Bowie 2 group of ruins. Fort Bowie 2 will be the major stabilization effort, and the conditions of historic and non-historic materials of Fort Bowie 1 ruins have been studied and can be assumed to be similar to those of Fort Bowie 2.
 - c. be distant from the visitor path and at such an angle that the work, while in progress and upon completion, is not intrusive,
 - d. have cement-treated adobe foundation evident above grade,
 - e. be a single wall section with characteristic historic adobe and lime or mud plaster, and non-historic cap, veneer, and plaster.
2. Identification of the "test" historic wall: The historic wall section proposed as the "test" wall is the southernmost wall of HS 001, Officer Quarters.
 3. Materials sampling: At this time, materials sampling is proposed for the historic "test" wall only. The procedure for sampling will be as described in the September 7 memorandum.
 4. Soils survey, characterization, and mapping: Soils will be sampled from the supposed historic borrow pits as described in the September 7 memorandum. In addition, samples will be taken of soils throughout the Park area, outside of the immediate area of the ruins, to determine the feasibility of obtaining soils for stabilization materials from within the Park boundaries if commercial sources are not available. Such sampling will include areas not previously investigated and will be supervised by an archeologist. Following sampling, the soil characterization of the area will be mapped on existing topographic maps and used to determine soil location, probable and appropriate drainage, etc.
 5. Procuring soils for manufacture of stabilization materials: Both appropriate soils available from within Park boundaries that have been determined archeologically insignificant and appropriate soils available from commercial sources will be investigated for possible use in the manufacture of stabilization materials. Every attempt will be made at this time to find materials comparable to the historic material while avoiding use of the supposed historic borrow pit.

6. Criteria for removing non-historic material: The non-historic material to be removed must:
- a. not structurally support the wall section,
 - b. have some adverse effect on the historic fabric. At Fort Bowie, this may be a poor match, non-historic to historic, of color, texture, bonding pattern, or acquisition profile to existing profile, etc.,
 - c. be highly conjectural or total reconstruction,
 - d. encourage deterioration of historic fabric because of poor bonding to historic material, non-absorptive characteristic of cement, hardness and resistance to any weathering of non-historic material, etc.

It may be said at this point in the study that very little, if any, existing non-historic material has other than an adverse effect on the historic resource or interpretation of the resource.

7. Methods for removing non-historic materials: The methods for review can be characterized as methods that will have the least impact on the resource. This includes the physical impact of vibration in working loose the non-historic materials as well as the impact of removing historic materials when non-historic materials are removed. The methods proposed are simple: handtool methods, such as trowels used at Fort Selden, to wedge apart the historic and non-historic materials, handsaws in those situations where there is no possibility of working a trowel between the historic and non-historic materials, and hammers to fracture stabilized adobe plasters and thin veneers in order to remove them with a trowel. Almost all non-historic materials are attached to the historic fabric by a layer of deteriorated material that would be no loss if disturbed when non-historic materials are removed. Some non-historic plaster and veneer, however, are attached by sound historic fabric and removal will require slow, careful work.
8. Methods for placing new stabilization materials: From the evidence at Fort Selden, these are three successful methods of placing stabilization materials: placing whole adobe blocks in mud mortar, plastering in multiple thin layers, and slumping adobe mortar from a trowel. All three methods are proposed for the "test" wall with the following addition: at Fort Selden, either whole blocks were used or a heavy adobe plaster, depending on the extent of deterioration. It is evident at Fort Selden that in some cases, the plaster is too heavy to bond well with the historic fabric. At Fort Bowie, it is proposed that cut as well as whole blocks be used, resulting in both a better bond and structure and a better overall wall texture.

9. Stabilization of historic lime plaster: The lack of bond between historic lime plaster and historic adobe can only encourage deterioration of both materials; deterioration due to moisture, freezing and thawing, rodents and insects, etc. The plaster must be reattached or the void behind the plaster filled. Artificial and natural methods are considered: epoxies or various bonding resins or plastics, and lime plaster similar to the historic plaster. Filling the void with mud is also a possibility, but mud deteriorates quickly and is subject to continuous insect and rodent infestation.

Epoxy stabilization of lime plaster was tested at Fort Bowie in 1974 by James D. Kriegh (Kriegh, 1974) and has not proven successful. Historic adobe that was strengthened by the epoxy that was introduced behind the lime plaster has pulled away from the unstrengthened adobe further into the wall, resulting in plaster that is yet unattached. Therefore, reattachment using lime plaster is proposed. The procedure will be as follows: holes are drilled in the area of the section to be reattached at 1-foot intervals in both directions, and lime plaster is induced at the bottom of the unattached area at the edge or through the bottom hole. Plaster is forced into the void until plaster seeps out from the surrounding holes. The procedure is then repeated at successively higher holes.

The plaster is allowed to set and is then tested for complete reattachment by sounding for hollow areas. Any areas yet unattached can be redrilled and the voids filled.

The formula of the stabilization lime plaster will be devised from testing of historic lime plaster by sampling attached historic plaster; or pieces which have fallen to the ground.

Since the stabilization lime plaster will not be visible except for the very small areas of the drillholes, there will be no attempt to match historic and non-historic plaster colors. The new lime plaster, however, will have similar physical characteristics to historic plaster, such as hardness, porosity, ability to bond with adobe and lime plaster, and be a plaster that can be worked into the void behind historic lime plaster. Stabilization plaster will be manufactured only from commercially available materials.

10. Use of mud plaster to prevent deterioration: Mud plaster has been proposed as a preservation technique. Evidence from photographs in the Historic Structure Reports indicate that few of the buildings were ever plastered and of those perhaps one, the Post Trader Store, was plastered with mud. The Master Plan outlines a theme of 'historical abandonment' of the area. Mud plastering would be a conjectural technique inconsistent with the historic documentation. Moreover, historic mud plaster would

appear inconsistent with the acquisition and existing conditions of the structures.

A complete mud plastering of the ruins is not recommended. However, on those portions of structures where stabilization with adobe block is not feasible because deterioration is slight but active, adobe plaster is the recommended technique.

Legislative compliance review comments are included in II.F.1., this report.

Following review of proposed historic fabric and area soils sampling, a contract for soils sampling and characterization was awarded to Donald Post, Professor of Soil Science at the University of Arizona, Tucson. The contract report, "Soil Survey of Fort Bowie National Historic Site with Special Emphasis on Soils Having Potential for Adobe Production" (Post, 1978), describes the soil types within the area boundary and the sites of historic adobe borrow pits. Concurrently, samples were taken of historic fabric of all above-grade adobe remains. Site soils and historic fabric were analyzed at the Western Archeological Center's soils laboratory for physiochemical properties and color.

The analyses were compared and stabilization soils which are compatible with historic fabric were identified. Local sand and gravel companies were surveyed to locate appropriate stabilization soils outside the park boundary. None were found; only soils within the park boundary match historic fabric. An environmental assessment was prepared to document the possible impact of borrow-pit operations if soil was taken within the park boundaries. The assessment was prepared by the Western Archeological Center for the Superintendent at Chiricahua National Monument. The assessment was then forwarded to the Western Regional Office for review. It was agreed that the benefit of compatible stabilization materials compensated for the impact of borrow-pit operations. The environmental assessment for stabilization work on above-grade adobe ruins is included in II.F.3.a, this report.

Post's soil survey distinguished between materials appropriate for stabilization of the first and second forts. First fort materials are available throughout the site with large deposits along the non-historic road which leads to the maintenance yard. This area has been continually disturbed since the park began maintaining the road in 1964, and adequate soil was available for stabilization without further disturbance. Second fort materials are less available, as described in Post's "Soil Survey . . .":

The source area for this strong brown to reddish-yellowish brown adobe material is quite limited in extent. To me it is quite evident that it (Fort Bowie 2 adobe materials) came from the Apache Spring area in the vicinity of the Wikiup (a non-historic interpretive feature along the visitor trail).

This material (historic borrow material) is alluvial-colluvial from the granite type rock of the area. Although there are

extensive areas of granite on the Site, there is relatively little rock free, deep, reddish brown deposits. Most places the soil is shallow and rocky limiting its use. I found only a single source area besides the original source area near the Wikiup. This site is located about 400 meters west and 50 meters south of the parking area at the start of the Fort Bowie (visitor) trail. Granite sediments eroded from north facing slopes are dark brown from the higher organic matter content found on north slopes, whereas the granite alluvium-colluvium from these sample sites was eroded mostly off south facing slopes.

The environmental assessment described the impact of borrow pit operations on the area near the parking area. The area proposed had been previously excavated for fill when rebuilding Apache Pass Road, and is continually disturbed by the El Paso Natural Gas Company when maintaining a pipeline. Area and Regional personnel concurred that borrow pit operations would not increase adverse impact on this area.

At the end of April 1978, the proposed test wall in HS 001 was completed. The procedure used on this wall is typical of all Fort Bowie adobe stabilization work during the 1978 season. Soil-cement adobe were loosened using rock hammers and chisels and removed course by course. Cavities behind soil-cement adobe were raked and filled with unamended mud and broken new adobe. The repair material was formulated to match historic adobe or historic mortar. An adobe cap which matches historic adobe was slumped onto all horizontal and sloped surfaces. Soil-cement adobes were removed from undercuts at the northern and southern base of the wall segment and replaced with new natural adobe blocks.

During May, contracts were let for excavating and delivering soil from the borrow pit near the parking area to the park maintenance yard, and for periodically removing soil-cement debris that accumulated during the work season.

During the first week in June, five seasonal laborers began the 1978 season digging trenches under the direction of Barrie Thornton, Archeologist, Division of Internal Archeological Studies, Western Archeological Center. Trenches around most adobe walls were re-excavated to expose soil stratigraphy. This work was first completed in 1967, but the record was since lost. The record of the 1978 excavations is included as section III, this report.

Also, the trenches were excavated to expose concrete 'aprons' added to the base of adobe walls after 1968, as detailed in the March 2, 1978 memorandum quoted above. To discourage rainwater from settling near the bases of walls, portland cement was plastered on historic adobe and stone foundations with the top of the plaster at grade and the bottom approximately 1-2 feet below grade. At the bottom of wall plaster a concrete 'apron' extended away from the wall 1-2 feet. Together the plaster and the apron formed an 'L' of waterproofing material. When the plaster and apron were dry, they were coated with an asphaltic foundation waterproofing material. Subsequently, when grade did not

remain stable and the plaster was exposed at the bases of walls, the plaster and asphalt were coated with a thin beige-colored cement wash to conceal the black asphalt. Since application, the plaster and apron have cracked perpendicular to the walls and lost their bond to historic fabric. Deterioration of the plaster and apron encouraged deterioration of historic fabric beyond, and the lowering of grade exposed the visually intrusive cement plaster. The ineffective materials were removed by excavating to expose the non-historic materials, cracking the plaster and apron into manageable pieces, and removing them by hand. All trenches were cleaned of concrete and soil-cement fragments, and backfilled with little alteration of grade.

Work proceeded to removing non-historic soil-cement materials. As described in the project proposals, all soil-cement was to be removed except that which provided the chief support for adjacent historic fabric. Soil-cement remaining in the walls at the end of the 1978 work season are shown on the photographic portion of the drawings in section VII, this report.

Hand-tool methods were used on soil-cement materials attached to historic fabric. Power tools were used on non-historic materials which had no historic fabric beneath. Again, holes and deteriorated areas were cleaned to sound historic fabric. All areas to be filled or covered with new unamended mud were wetted prior to mud application. When filling holes, mud was forced to the interior and the void was filled with alternating layers of broken adobes and mud. Horizontal and sloped areas were capped with unamended mud slumped onto historic fabric from trowels or hand-packed in 1-2 inch lifts. The thickness of caps depends on the width of the walls but all caps were applied at a minimum 3-inch thickness. Dark plastic strips were nailed onto the top of the first lift of capping material in order to show when subsequent lifts had eroded away and exposed the bottom layer.

The ruins of the first Fort Bowie were stabilized with 'gray' soil taken from the side of the approach road to the maintenance yard. This material has screened sand taken from desert washes along Apache Pass Road added for workability.

The ruins of the second Fort Bowie were stabilized with 'reddish-brown' soil which is a mixture specific to each structure. The 'red' soil is from the borrow pit near the visitor parking area. The 'brown' soil is from Siphon Canyon near the park boundary. The sand was screened material taken from desert washes along Apache Pass Road.

The following chart is a summary of soil-sand mixtures used for adobe stabilization in 1978. All quantities are parts by volume.

<u>Historic Structure</u>	<u>Soil (in parts by volume)</u>			
	<u>Red</u>	<u>Brown</u>	<u>Gray</u>	<u>Sand</u>
003	4	14		4
004 and 005	6	14		4
008	14	6		6
014	14	3		6
015				
North wall:	14	4		4
South wall:	14	14		6
018	14	6		4
021	14	4		4
026 and 028	14	6		4
035	14	6		6
101, 106, and 108			14	6

The list does not comprise all structures, but only those for which single batch mixes of stabilization materials were appropriate. Similar mixtures and combinations of mixtures were used on other structures.

E. Stabilization of Above-grade Stone Ruins

1. Early proposals

Adobe ruins have always been the major stabilization concern at Fort Bowie. The deceptively permanent appearance of stone has made research and work on stone ruins secondary to the preservation of historic adobe fabric. Stabilization of stone ruins is not mentioned specifically in early park acquisition and stabilization proposals.

2. Stabilization work completed, 1967-1977

The Historic American Buildings Survey (HABS) and stabilization of the ruins began in 1967 and continued simultaneously. The HABS drawings were completed under contract with Gordon Heck, AIA, of the University of Arizona, Tucson, by March of 1968. The ruins which are only stone remains and included in the survey are HS 019, 032, 033, and 036. All are shown during the 1967 stabilization work. (The HABS drawings are included in VII.A., this report.)

In 1967, historic stonework was stabilized simultaneously with historic adobe fabric. The methods varied. For standing stone ruins, generally, missing mortar was replaced with soil-cement or tinted white cement mortars and the top course of stone was relaid in similar non-historic mortar. For fallen stone ruins, low walls were reconstructed from scattered stones in the position of each structure. No drawings were completed for any of the 1967 stabilization work and because ruins at grade are not as easily photographed as taller ruins, the photographic record is difficult to interpret. Photographs of scattered rocks are not significantly different from photographs of the same rocks rearranged into low stone walls. The 'before and after' photographs in the stabilization reports (Morris, 1967, etc.) do not clearly show the extent of reconstruction and there are no narratives to supplement the photographs.

In the ten years since initial stabilization, both historic and non-historic mortars have deteriorated without maintenance.

Foundations of many historic stone walls and reconstructed walls are inadequate. Since initial stabilization work in 1967, grade has changed and foundation stones have worked loose resulting in gaps in the foundations or stone walls which are resting on grade. Generally the walls have cracked from inadequate support.

Not all historic mortars were repointed or replaced in 1967. All historic mortar has deteriorated by weathering and rodents, especially mortar which is at or near grade. In extreme conditions, all historic lime or mud mortar has eroded and loose stones remain. As well, deterioration of non-historic mortars has continued in two ways. Most non-historic mortars are thinly applied over historic lime or mud mortars and are not well-bonded to historic fabric. Moisture is trapped between historic and non-historic materials and deterioration is caused by resultant freeze-thaw cycles, moss, etc. In those situations where stones were more heavily stabilized with cement mortars, the different densities and strengths of non-historic cement mortars and historic stones have either caused the mortar or the stones to crack. Historic granitic and limestone rock is soft compared to non-historic cement mortars.

Many of the structures with above-grade remains and standing adobe ruins were treated with chemical preservatives. Chemicals washed from treated adobe onto stonework below and were applied directly to stonework without thorough documentation. The persistence of chemical treatments is evident both in the stone when in damp winter weather the chemicals are leached to the surface and crystallized by freezing as a white efflorescence, and in the mortar when characteristic chemical deterioration of cement bonding causes delamination of mortar layers or efflorescence of cement.

It has proved impossible to maintain either the non-historic materials or the juncture between historic and non-historic materials.

3. Stabilization proposals

The extremes and approximate mean of possible treatments of above-grade stone remains can be summarized as follows:

- a. All mortar, historic and non-historic, should be replaced with new non-historic mortar which is more durable than historic materials, but compatible with historic stone. This choice would require almost complete dismantling of historic stonework and significant loss of historic mortar.
- b. No mortar should be changed. This choice of doing nothing would have the effect of permitting reparable induced and natural erosion to continue unchecked. Adequate maintenance to slow deterioration is both possible and simple, and consistent with current preservation of soft building materials.
- c. Non-historic materials which deteriorate adjacent historic fabric should be removed and replaced when least harmful to historic

fabric. This choice would provide for a gradual replacement of existing stabilization materials with more compatible mortars, with minimal loss of historic fabric. Adequate maintenance to slow deterioration is possible and simple, and consistent with current policies of soft building materials maintenance. Initially, only non-historic material which is not bonded to adjacent historic fabric or sound non-historic material which is causing extreme damage to adjacent historic fabric should be removed and replaced with materials compatible with historic stonework. A similar cyclic maintenance policy would gradually remove and replace all deleterious materials.

Prior to commencing the 1979 stone preservation work, the three choices were discussed among Regional, Western Archeological Center and Denver Service Center personnel. Choice 'c' was the recommended treatment. All non-historic material was tested for sound attachment to adjacent historic material, and removed if it was not well attached. Replacement mortar was made to match adjacent historic mortar, either lime or mud mortars. All re-worked joints were pointed in imitation of adjacent historic joints. The top course of some walls were relaid. Replacing the stones exactly is not important since there is no record of acquisition or prestabilization conditions. The tops of most walls were rebuilt in 1967 from rocks loose on the ground, generally following the outline of the wall, but without knowing the historic position of each stone.

Appropriate lime mortar was made from commercially available lime and sand from local washes in approximate proportion of 4:1::lime:sand. For pointing, the lime and sand putty should be stiff, with enough local soil added to make it workable. For setting mortar, the mixture can be wetter, but adding soil would reduce the amount of water necessary to make the mixture workable, and consequently control shrinkage.

As with adobe, methods for stone stabilization were those which have the least impact on adjacent historic fabric. Only handtool methods were used. Stones and existing mortar were tested for how well they are bonded to adjacent materials. Such tests were made by tapping, lightly prying, etc. Materials not soundly attached were removed with hammer and chisel. Joints were cleaned to a depth of at least 1 inch prior to repointing. All mortar was cleaned away around stones which needed to be reset. Joints were repointed by forcing successive layers of mortar, each 1/4 - 1/2 inch thick into the cleaned joint. Relaid stones were set with joints as thick as adjacent or nearby historic joints.

Lime mortar dries exceptionally white in Arizona sunlight. This distracting result was mitigated by applying muddy water to all new mortar joints before they were completely dry.

Stabilization of stonework was completed by mid-September, 1979.

F. Analysis of Effect

1. Legislative compliance: Effect of adobe stabilization

The 1978 adobe stabilization work was proposed during 1977 and at that time the Arizona State Historic Preservation Officer and the Advisory Council on Historic Preservation were afforded "a reasonable opportunity to comment with regard to such undertaking." (The National Historic Preservation Act, 1966. Public Law 89-665.) The proposal documentation and transmittal of the proposal for legislative compliance review were included in II.D.3., this report. The following are the verbatim review comments from the State Historic Preservation Officer and the Advisory Council on Historic Preservation.

The first is a March 20, 1978 letter from Dorothy Hall, State Historic Preservation Officer for Arizona, to Howard Chapman, Director, Western Region:

The following three related project proposals for Ft. Bowie National Historic Site have been reviewed.

Adobe Stabilization Test Walls (letter of July 13, 1977)

Cyclic Maintenance (letter of November 9, 1977)

Comprehensive Adobe Ruins Preservation (letter of November 23, 1977)

I have determined that these project proposals, all developed in an effort to reverse deterioration and stabilize and preserve the Adobe Ruins at Ft. Bowie, will have no adverse effect on those cultural resources.

The second is an April 24, 1978 letter from Louis Wall, Assistant Director of the Office of Review and Compliance of the Advisory Council on Historic Preservation, to Howard Chapman, Director, Western Region:

On April 3, 1978, the Council (Advisory Council on Historic Preservation) received a determination from the National Park Service that ruins maintenance work and comprehensive adobe ruins preservation work at Fort Bowie National Historic Site, Arizona, would not adversely affect that property which is included in the National Register of Historic Places. The Executive Director (of the Advisory Council on Historic Preservation) does not object to your determination with respect to the comprehensive ruins preservation work. However, from our review of the material submitted on the ruins maintenance project, it would appear that project has already been completed. Accordingly, the Council has no comment to make.

A copy of your determination of no adverse effect, along with supporting documentation and this concurrence, should be included in any assessment or statement prepared for this undertaking in compliance with the National Environmental Policy Act and should be kept in your records as evidence of your compliance with Section 106 of the National Historic Preservation Act of 1966 (16 USC 470f, as amended, 90 Stat. 1320).

In addition, we also acknowledge receipt of your determination that the below listed projects would result in no effect to the subject National Register property:

1. adobe stabilization test walls;
2. construction of a replacement public-use toilet;
3. remarking the route designated as the Butterfield Overland Trail; and,
4. upgrading of non-historic "Indian camp: which is used as a student environmental education encampment.

The Council will retain this documentation in its files. The National Park Service should also include a copy of this determination in any environmental documentation, as a record of the steps taken to document its determination of no effect.

2. Legislative compliance: Effect of stone stabilization

This analysis is prepared according to the Advisory Council on Historic Preservation's "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800), as amended, effective March 1, 1979, to document the effect of stone stabilization.

Fort Bowie National Historic Site is eligible for the National Register of Historic Places because of its historical association with nationally significant events. Stone stabilization work affected a portion of the resource but had no adverse effect on the qualities for which Fort Bowie is on the National Register.

In legislative compliance documentation prepared in 1977, the term "historic fabric" was meant to describe both adobe and stone masonry. In March of 1979, the State Historic Preservation Officer for Arizona requested documentation which specifically describes stone preservation work. The documentation was filed with the State Historic Preservation Office and the Western Archeological Center.

From the March 1, 1979 amendments to 36 CFR Part 800, adequate documentation of a Determination of No Adverse Effect should include the following information:

1. Three units of the National Park Service are working on the preservation of the ruins of Fort Bowie: the Western Archeological Center, Tucson, Arizona; the Denver Service Center, Denver, Colorado; and Fort Bowie National Historic Site. Preservation by stabilization is consistent with the terms of the enabling legislation (78 Stat. 681):

That the Secretary of the Interior is authorized to designate for preservation as the Fort Bowie National Historic Site, the site and remaining historic structures of old Fort Bowie . . . subject to the provisions of the Act entitled 'An Act to establish a National Park Service . . .' (39 Stat. 535) . . . and all laws and regulations of general application to historic areas within the national park system.

2. The undertaking comprises the stabilization of the historic and reconstructed portions of Fort Bowie's ruins. Current stabilization work is the beginning of on-going cyclic maintenance which will replace deteriorated historic and non-historic materials with compatible natural materials.

3. All structures and all land within the National Park Service boundaries are eligible for the National Register of Historic Places with the exception of all development (buildings, trailers, trash areas, utilities, landscaping, trails, etc.) since acquisition of the area by the National Park Service.

4. Ruins stabilization at Fort Bowie has no adverse effect on the quality of the historical character that qualifies the property for the National Register.

Existing conditions of the ruins circa 1967-1977 did not represent the area's interpretive theme of 'historical abandonment'. Neglect was resulting in speedy destruction of the ruins. Within the limits of current technology, stabilization with compatible natural materials is the appropriate response to the nature of adobe deterioration.

5. No written views of the State Historic Preservation Officer regarding stone stabilization have been received.

6. All funding is Federal.

Funding is divided into three categories:

Ruins stabilization:	\$552,500
Archeological research:	24,500
Historic Structures Report - Historical and Architectural Data Sections:	<u>87,000</u>
TOTAL	\$664,000

3. Environmental assessment

In order to document the effects of stabilization work on the environment within the ruins area and the park, two assessments have been prepared. An assessment of the effect of adobe stabilization was prepared prior to the 1978 work season and is included here as part of the completion report. An assessment of the effect of stone stabilization is included as an addendum to the 1978 assessment.

a. Stabilization of above-grade adobe ruins

From the initial environmental assessment prepared by the Western Archeological Center for the Superintendent, Chiricahua National Monument:

Environmental impact of the proposed action: During stabilization work, the existing dirt road from Apache Pass road to the National Park Service parking lot and service area will

be used for vehicles, supply storage, adobe production, and storage of soil-cement adobe after removal from the ruins and prior to removal from the site. The existing dirt road from the service area to the ruins area and the ranch roads within the ruins area will be used for transportation of stabilization materials and soil-cement materials, which have been removed. These roads will be used by pick-up vehicles, as in the past.

The established trails of the area will be used to transport stabilization materials in small, one-person vehicles. The small vehicles will leave the trail for the short distances to the work sites at each ruin.

Areas where the small vehicles will travel off the path are areas disturbed by the 1967 stabilization work, and sparsely grown with grasses seeded by the National Park Service in the past 10 years and some small native plants.

For the duration of the stabilization work, the presence and effect of vehicles, workers, supplies, noise and activity will have a visual and aural impact on the historic scene.

While planning the stabilization work, samples were taken of historic and non-historic soil and lime materials, both within and outside the site, in order to locate a source for compatible stabilization materials. Samples were taken of each historic adobe wall, the historic borrow pits near Apache Spring, the historic lime beds near the National Park Service office and soils available from nine commercial soil yards in the Bowie-Willcox area. Samples were taken for both a soils survey completed by Don Post of the University of Arizona and for more exhaustive analysis by the soils lab at the Western Archeological Center, Tucson. No commercially available soils or lime, or materials available from private lands outside the Park boundaries are appropriate for use in stabilizing the ruins. None closely match the composition, durability, or color of the historic adobe, mortars or plasters, and only materials very similar to the historic borrow pit materials will be successful.

Soil which matches the historic borrow pit soil is available within the Park boundary next to the El Paso Natural Gas Company pipeline inspection road near the trailhead. The soil is in a mound approximately 5 feet high by 15 feet across, which was left when excavations for soil to construct Apache Pass road were completed. The mound is the volume, approximately 20 yards, of soil similar to the historic borrow pit material which is needed for re-stabilization work.

Removal of the mound would have the effect of moving back the face of the mound approximately 10 feet to soil which is not appropriate for adobe production. The area uncovered by excavation will be at the same grade elevation as adjacent flat land.

The mound area is not visible from the visitor entrance road, and there is no vegetation on the mound.

It is conclusive from field investigation and laboratory analyses that only soil in the immediate vicinity of the mound described above is appropriate for stabilization of the Fort Bowie ruins. Only the mound affords the opportunity of removing soil without digging a hole.

The lime which matches the historic lime bed material is available as talus which results from the grading of the road from Apache Pass road to the National Park Service area, as the low (2-3 feet) walls of lime which result from the roadcut, and as lime which has fallen along the road from the low walls. Removal of lime from this area will have the same effect as the cyclic grading of the access road.

There is little or no vegetation on the road or roadway shoulders.

Mitigating measures: To prevent the disturbance of archeological features in the vicinity of the project, all areas to be utilized will be inspected by an archeologist prior to beginning work. The archeologist will ensure that all work areas are located so as to avoid disturbing cultural remains. The archeologist's inspection will be documented as an archeological clearance and filed at the Western Archeological Center, Tucson.

All excavation to expose the below-grade bases of walls will be supervised by an archeologist. Archeological notes will be taken, describing the fill and any other features that may be uncovered. If necessary, a profile will be drawn showing any cultural fill thus exposed. Complete written and photographic recording will document all archeological activities.

Any tracks resulting from off-road and off-trail driving will be obliterated by raking and working the soil, if necessary, and by the heavy summer rains.

Debris resulting from stabilization work will be removed from the ruins area, collected in the National Park Service service area and eventually removed from the site.

Local and seeded plants in this area recover well. Almost all destruction of vegetation is quickly reversible because of the annual rains and the nearly year-long growing season.

The effect of removing lime material from the access road will be obliterated with the next road grading.

The effect of removing the mound of adobe soil from the trailhead area will be largely obliterated by the next rains. The effect of altered drainage patterns should be minimal: the

land remaining when the mound is removed will be graded to match adjacent grade elevations.

Adverse effects which cannot be avoided: Soil will be removed for adobe production and lime will be removed for mortar and adobe production and plaster repair.

Short-term use versus long-term productivity: Stabilization of the Fort Bowie ruins will ensure that the cultural resource will continue to be available as an interpretive feature. For a short period of time, the visitor will be inconvenienced by the sight and sound of stabilization activities intruding upon the historic scene. However, if stabilization were not performed, the site would rapidly deteriorate to the point where its effectiveness as an interpretive area would be negligible. Stabilization at this time will allow better preventive maintenance in the future.

Irreversible and irretrievable commitment of the resource: Historic adobe still attached to non-historic soil-cement stabilization materials will be removed when soil-cement materials are removed. Some portions of structures, which have deteriorated beyond stabilization while covered with soil-cement materials, will be lost.

Alternatives: The stabilization choices range from doing nothing and quickening the loss of the resource, to covering the resource in ways which would adversely effect their integrity as ruins and their use as interpretive tools to recall an area of activity, which is now abandoned. The proposed stabilization work emphasizes the integrity of the ruins, the interpretive theme of "historical abandonment" and the continuing preservation of the resource by reasonable and effective cyclic maintenance.

Consultation in the development of the stabilization work: Having reviewed a Western Archeological Center proposal for ruins restabilization, the State Historic Preservation Officer for Arizona determined that, "these project proposals, all developed in an effort to reverse deterioration and stabilize and preserve the Adobe Ruins at Fort Bowie, will have no adverse effect on those cultural resources." (Letter, Dorothy Hall, State Historic Preservation Officer for Arizona to Howard Chapman, Director, Western Region, National Park Service, March 20, 1978). The Advisory Council on Historic Preservation concurred that the proposed "comprehensive ruins preservation work . . . would not adversely affect that property (Fort Bowie) which is included in the National Register of Historic Places (Letter, Louis Wall, Assistant Director, Office of Review and Compliance (Denver) of the Advisory Council on Historic Preservation to Howard Chapman, Director, Western Region, National Park Service, April 24, 1978).

Negative Declaration

In reviewing this proposal and its potential impacts, the National Park Service finds that it is not a major federal action significantly affecting the environment. Therefore, no environmental impact statement will be prepared.

b. Stabilization of above-grade stone ruins

Several aspects of stone stabilization work were similar to adobe stabilization work, with similar environmental impact. The disturbance of the general park area by vehicles, supply storage and materials production were also part of stone stabilization work. These activities were included in the 1978 assessment and further review is unnecessary.

Materials required for stone stabilization included lime, soil and sand. The lime was purchased commercially. Appropriate soils are stockpiled in the maintenance area at Fort Bowie. The sand was available from washes outside the park boundaries. Procuring these materials had no effect of the park environment.

III. FORT BOWIE TRENCHING PROJECT - STRATIGRAPHIC DATA

Barrie Thornton, Archeologist, Division of Internal Archeological Studies, Western Archeological Center, 1978.

The purpose of trenching the walls at Fort Bowie was to expose an asphalt and cement apron that had been laid below the surface against the adobe walls for preservation purposes. A stratigraphic record was to be made of each trench. The trenches were to be sunk in the same location as the previous stabilization trenches. As it turned out, the new trenches did not always extend to the perimeter of the old trenches, so minimal data was obtained. This resulted from the fact that only the upper portion of the asphalt apron was to be removed during the 1978 adobe stabilization work so the new trenches did not need to be as large as the previous ones. When the trenches exposed no original soil, a trench was extended on one side of the wall to collect this data, however, time did not allow the extension of all trenches.

(Trench numbers correspond to numbers on drawings on file at the Western Archeological Center, Tucson.)

HS 001

Trench 35 - At the north end of this trench, the apron extends down to a depth of 75 cm. A loose disturbed layer extends down 25 cm. Below this is a 38 cm layer containing cultural material, wood, brick, and mortar fragments.

Below this is a dark brown sterile layer which extends below the apron.

On the south end a disturbed soil layer is 25 cm deep above a 13 cm layer of undisturbed dark brown soil.

Trench 36 - This trench drops 46 cm to the bottom of the apron, exposing only disturbed soil from the previous trench.

Trench 37 - The total depth of the trench is 70 cm. At a 30 cm depth, the original brick floor was encountered. At 50 cm the soil changes to a dark brown with no evidence of cultural material.

Trench 38 - Total depth to bottom of apron is 77 cm. The first 43 cm is disturbed fill containing wood fragments. Below this for 35 cm to below apron is a dark brown layer with no cultural material.

The rest of the trenches in this building were sunk to the bottom of the apron but exposed only disturbed fill from the original trenches.

Trench 39 - Depth to apron bottom 84 cm.

Trench 40 - Depth to apron bottom 122 cm.

Trench 41 - Depth to apron bottom 122 cm.

Trench 42 - Depth to apron bottom 105 cm.

Trench 43 - Depth to apron bottom 122 cm.

Trench 44 - Depth to apron bottom 84 cm.

HS 003

Trench 45 - The total depth of this trench is 110 cm and exposes only disturbed fill to the bottom where a dark brown layer shows below the apron.

Trench 46 - Trench descends to 88 cm to bottom of apron. Only disturbed fill exposed which contains numerous mortar fragments.

HS 004 and 005

Trench 47 - Total depth of trench is 60 cm. Only disturbed fill in trench. At south end an adobe wall foundation is located just below the surface.

Trench 48 - Depth of trench to apron is 75 cm exposing only disturbed fill.

Trench 49 - Depth of trench varies 46-75 cm. Only disturbed fill exposed.

Trench 50 - Depth of trench is 55 cm. Only disturbed fill exposed except at north end where a rock wall foundation is located approximately 25 cm below surface.

Trench 51 - Depth of trench is 65 cm. Disturbed fill exposed to a depth of 46 cm and then a reddish soil layer occurs and progresses under the cement apron.

(No trench 52)

Trench 53 - Depth of trench is 33 cm. Only disturbed fill exposed.

HS 010

Trench 54 - The wall trench inside had a depth of 53 cm to the bottom of the apron and only disturbed fill was encountered.

Trench 55 - The outside trench was only 20 cm deep on the average and consisted of built-up material.

Trench 56 - The total depth of this trench was 68 cm with the first 43 cm containing disturbed fill with mortar fragments in it. A reddish to dark brown layer below extended for 25 cm to bottom of apron with no cultural material.

Trench 57 - Depth of the trench was 41 cm with the first 10 cm containing disturbed fill. The 21 cm below the fill layer was a hard brown layer containing no cultural material.

Trench 58 - Total depth of trench is 88 cm. Only disturbed fill exposed.

Trench 59 - Total depth of trench is 75 cm. The first 50 cm is a light soil containing cement or mortar fragments. The 25 cm soil layer below is a dark brown sterile soil.

HS 014 and 015

Trench 20 - A disturbed layer 71 cm deep overlies the apron. At a depth of 18 cm a reddish layer occurs which varies in depth 10-25 cm. No cultural material present.

Trench 21 - A loose rocky layer of disturbed soil extends to a depth of 41 cm. This layer has wood fragments in it. Below this, a dark gray layer extends 50 cm to bottom of trench. This reading was taken in undisturbed soil at end of trench.

Trench 22 - Original stratigraphy - loose surface soil extends to a depth of 23 cm. Below this, a hard gray layer containing wood and nails extends for 25 cm. Below this is a 20 cm layer of white and light gray chalky soil. Dark brown hardpack occurs on the bottom of the trench.

Trench 23 - A disturbed layer 110 cm deep extends to cement apron. The first 70 cm is loose disturbed material containing wood fragments. A layer 40-50 cm below this is composed of a reddish rocky soil, undisturbed, which continues to below apron.

Trench 24 - The total depth of this trench is 60 cm. A disturbed layer 30 cm deep is underlain by a dark gray layer containing wood fragments and plaster.

Trench 25 - Is 30 cm deep in eastern end and 84 cm in depth on the western end. Both ends exhibit disturbed soil, with the western end containing much glass and wood fragments.

Trench 26 - Total depth of trench is 90 cm to cement apron, containing all disturbed soil mixed with small plaster or mortar fragments.

Trench 28 - Total depth of the trench is 78 cm to bottom of apron. At the eastern end of the trench at a depth of 50 cm a reddish layer begins which continues to below the apron. This layer contains small wood fragments and pieces of mortar.

Trench 29 - Total depth of the trench is 65 cm. Only disturbed soil is exposed in this trench.

HS 018

Trench 1 - A loose layer of disturbed soil occurs to a depth of 25 cm, where cement apron bottoms out. Below this a compact gray layer of undisturbed soil.

Trench 2 - Surface layer of loose disturbed soil occurs to a depth of 20 cm where cement apron bottoms out. A compact gray layer lies below.

Trench 3 - Surface layer of loose disturbed soil extends 38 cm to the apron and a layer of black plastic. Lying below this a compact gray layer, undisturbed.

Trench 4 - A surface layer of loose disturbed soil extends 12 cm to the apron, below this is a compact gray layer.

Trench 5 - A layer of loose disturbed soil 38 cm deep lies above the apron. The new trench did not extend to the width of the original trench.

Trench 6 - A loose disturbed layer 27 cm deep lies above the cement apron. The trench did not extend to the width of the original. Below the apron is a dark brown hardpack.

Trench 7 - A loose sloping layer of disturbed soil varies 5 cm -23 cm above the apron. New trench does not extend to the original width of the old trench.

Trench 8 - A loose layer of disturbed soil occurs to a depth of 13 cm when apron slopes out.

Trench 9 - A thin surface layer 2 to 3 cm deep covers the apron along this wall.

Trench 10 - A loose surface layer of disturbed soil 13 cm deep when apron bottoms out. New trench does not extend to the exterior limit of the original. Below the apron is an undisturbed dark brown hardpack.

Trench 11 - A loose layer of disturbed soil occurs to a depth of 15 cm to apron. Below the apron is dark brown hardpack.

Trench 13 - A loose disturbed layer of 13 cm in depth overlies the apron with a dark brown hardpack below.

Trench 14 - A loose disturbed layer 38 cm deep overlies the cement apron.

Trench 15 - A disturbed surface layer 5 cm deep overlies the apron.

Trench 16 - A disturbed surface layer varying from 2 to 18 cm overlies the apron. Trench does not extend to original width.

Trench 17 - Disturbed surface layer varying 2 to 18 cm overlies apron.

Trench 18 - Disturbed surface layer 5 cm deep, just enough to cover the apron.

Trench 19 - Loose disturbed layer varies 8 to 30 cm above cement apron.

HS 021

Trench 31 - The apron bottoms out at a depth of 30 cm and only disturbed fill is exposed to that point. Below the apron a hard dark gray soil layer appears, which is not disturbed.

Trench 32 - Disturbed fill is all that is present to a depth of 60 cm.

Trench 33 - Disturbed fill to a depth of 65 cm where apron bottoms out.

Trench 34 - Total depth of trench is 55 cm, where apron ends. Loose fill exists to a depth of 33 cm then a hard dark gray layer extends to below the apron. This gray layer appears undisturbed.

HS 035

The only walls with the cement apron exposed are the interior north, east, and west walls of the corral. At the south end of Trench 30 only disturbed fill is exposed to bottom of the apron at a depth of 25-30 cm. A hard dark brown layer lies below the apron. On the east wall at a depth of approximately 55 cm a plastic drainage pipe prohibits further trenching. The disturbed soil up to that point contains much glass and charcoal fragments.

The remainder of the trenches in the Post Trader was sunk only to the plastic sheet which lies approximately 23 cm below the surface along all walls. Gravel covers this sheeting.

Photographic Record of Fort Bowie
Trenching Project - Stratigraphic Record

Western Archeological Center
Library Accession Numbers

Slide

1.	Trench 3 and 4	S 148
2.	Trench 1 and 2	S 149
3.	Trench 5 and 6	S 150
4.	Trench 7 and 8	S 151
5.	Trench 9	S 152
6.	Trench 10	S 153
7.	Trench 11	S 154
8.	Trench 12 and 13	S 155
9.	Trench 15, 16, and 17	S 156
10.	Trench 19	S 157
11.	Trench 20 and 21	S 158
12.	Trench 20	S 159
13.	Trench 21	S 160
14.	Trench 22	S 161
15.	Trench 23	S 162
16.	Trench 24	S 163
17.	Trench 25	S 164
18.	Trench 26	S 165
19.	Trench 27	S 166
20.		
21.		
22.	Trench 29	S 167
23.	Trench	S 168
24.	Trench 35	S 169
25.	Trench 35, close-up	S 170
26.	Trench 36 and 37	S 171
27.	Trench 40	S 172
28.	Trench 46	S 173
29.	Trench 45	S 174
30.	Trench 47	S 175
31.	Trench 47	S 176
32.	Trench 50	S 177
33.	Trench 56	S 178
34.	Trench 57	S 179
35.	Trench 59	S 180

IV. ANALYSIS OF PAINT COLORS ON WOOD FRAGMENTS RETRIEVED DURING FORT BOWIE TRENCHING PROJECT

During the 1978 work season, excavations to expose the non-historic concrete 'apron' at the base of walls with adobe foundations also exposed painted fragments of wood building materials. The excavations were supervised and recorded by an archeologist from the Western Archeological Center (section III, this report). At the time the wood fragments were not thought significant. After the trenches were backfilled, the author collected fragments from the surface only. The seventeen samples were studied and the most obvious layers assigned Munsell notations (Munsell, 1966).

The analysis is included as another aspect of Fort Bowie's architectural data and as continuing documentation of late 19th century military colors. No accurate provenience, not even interior-exterior, was possible after excavation.

The fragments have been returned to the area.

The sample designations, e.g., FOBO-(014-015)-03, can be deciphered as a sample from HS 014 and 015 at Fort Bowie of which this is sample 3.

<u>Sample</u>	<u>Material</u>	<u>Approximate paint layers</u>	<u>Munsell notation</u>
FOBO-			
001-01	painted wood	wood whitewash red	7.5R 5/12
001-02	painted plaster	plaster several layers of whitewash red	7.5R 5/12
001-03	painted wood	wood whitewash(?) red	7.5R 3/6
001-04	painted wood	wood red white brown whitewash(?)	7.5R 5/12 2.5R 3/2
001-05	painted plaster	plaster whitewash blue-gray whitewash	5B 9/2

<u>Sample</u>	<u>Material</u>	<u>Approximate paint layers</u>	<u>Munsell notation</u>
FOBO-			
001-06	painted wood	wood whitewash blue	5B 9/2
003-01	painted plaster	plaster whitewash blue-gray whitewash blue-gray whitewash	2.5PB 8/2 5B 9/1
003-02	painted plaster	plaster whitewash blue-gray whitewash	5B 9/1
003-03	painted plaster	plaster blue-gray whitewash	2.5PB 9/0
003-04	painted plaster	plaster gray whitewash	10B 9/1
(004-005)-01	painted wood (tongue and groove single edge bead siding)	wood whitewash	
(004-005)-02	painted wood	wood whitewash blue	10B 3/8
(014-015)-01	painted wood (single edge bead)	wood whitewash	
(014-015)-02	painted wood	wood whitewash(?) red	7.5R 4/8
(014-015)-03	painted wood	wood whitewash blue	7.5R 8/4
(014-015)-04	painted wood (beveled moulding)	wood green	5G 8/6
(014-015)-05	painted wood (beveled moulding)	wood green	2.5G 8/6

V. BIBLIOGRAPHY

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VI. Photographs

All photographs were taken by National Park Service personnel circa 1978.



HS 006: View looking west.



HS 019: View looking west.



HS 020: View looking west.



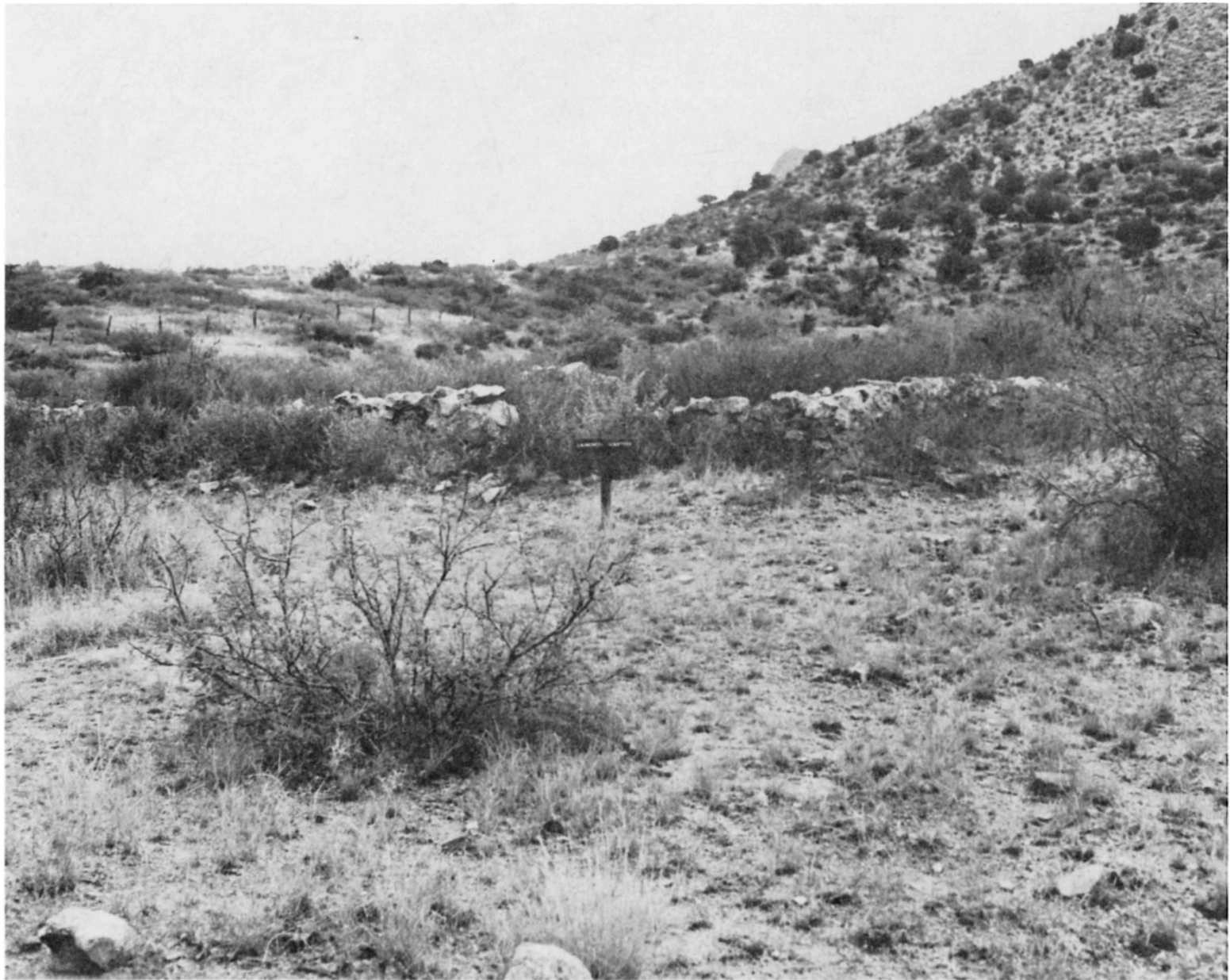
HS 022: View looking west.



HS 023: View looking southeast.



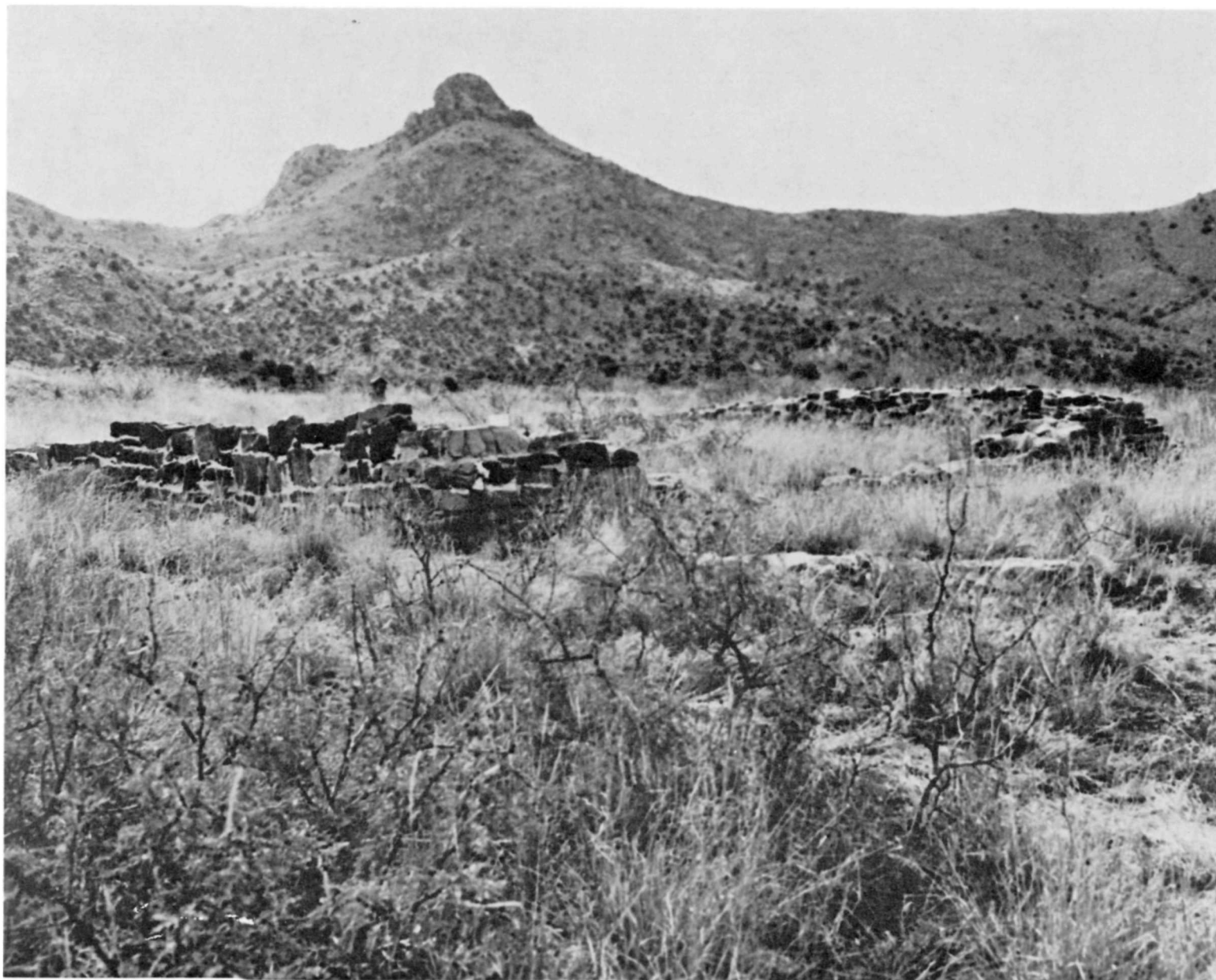
HS 025: View looking southwest.



HS 030: View looking southwest.



HS 031: View looking northeast.



HS 032: View looking southwest.



HS 033: View looking northeast.



HS 034: View looking southwest.



HS 035: View looking south.



HS 036: View looking northwest.



HS 043: View looking west.



HS 051: View looking southwest. The small numbered card evident in the photograph identifies the structure incorrectly.



HS 052: View looking southeast. The small numbered card evident in the photograph identifies the structure incorrectly.



HS 053: View looking southeast.



HS 054: View looking southeast. The small numbered card evident in the photograph identifies the structure incorrectly.



HS 057: View looking southwest.



HS 058: View looking south.



HS 059: View looking east.



HS 060: View looking northwest.



HS 061: View looking west.



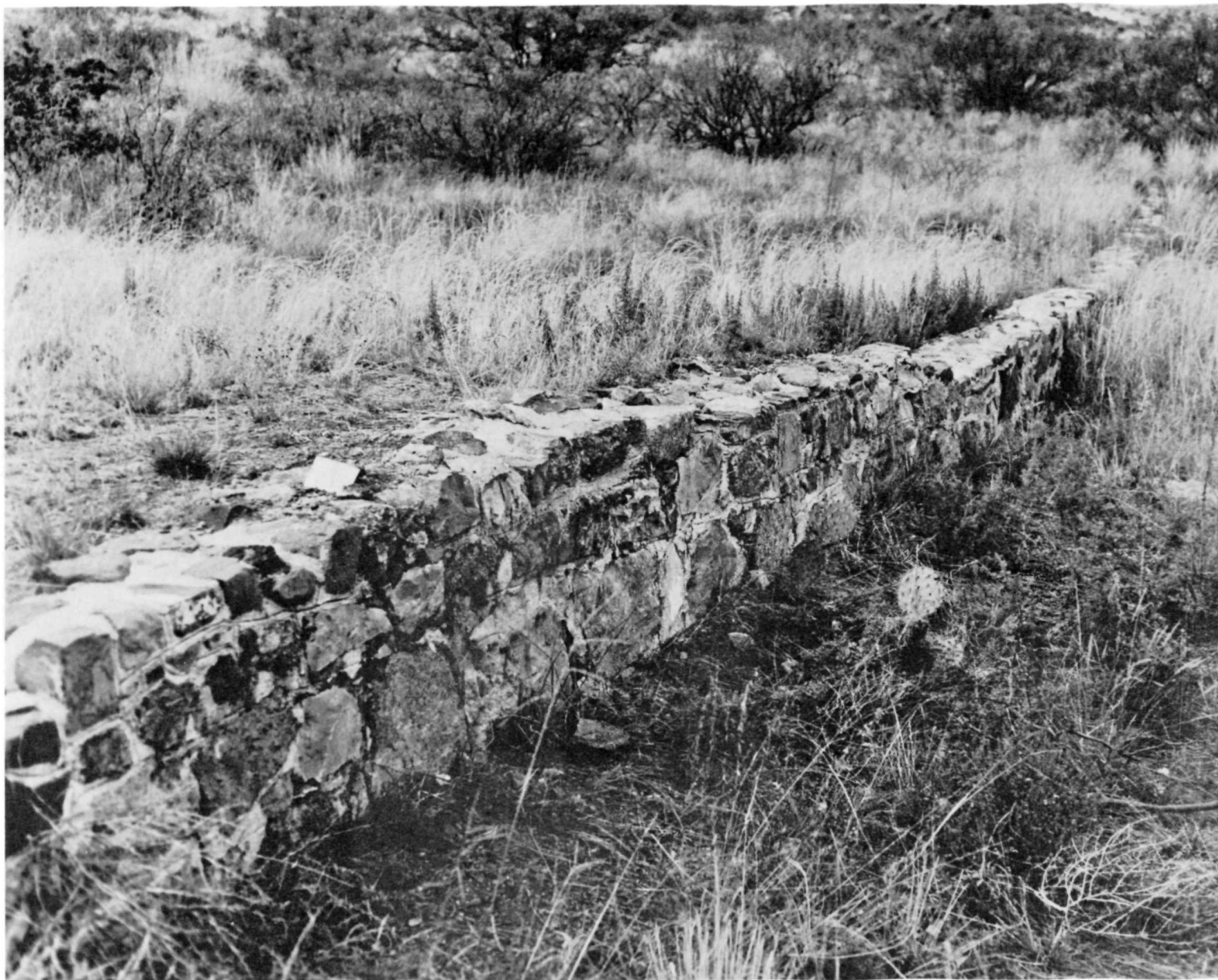
HS 062: View looking west.



HS 063: View looking west.



HS 064: View looking southeast.



HS 065: View looking northwest.



HS 067: View looking southeast.



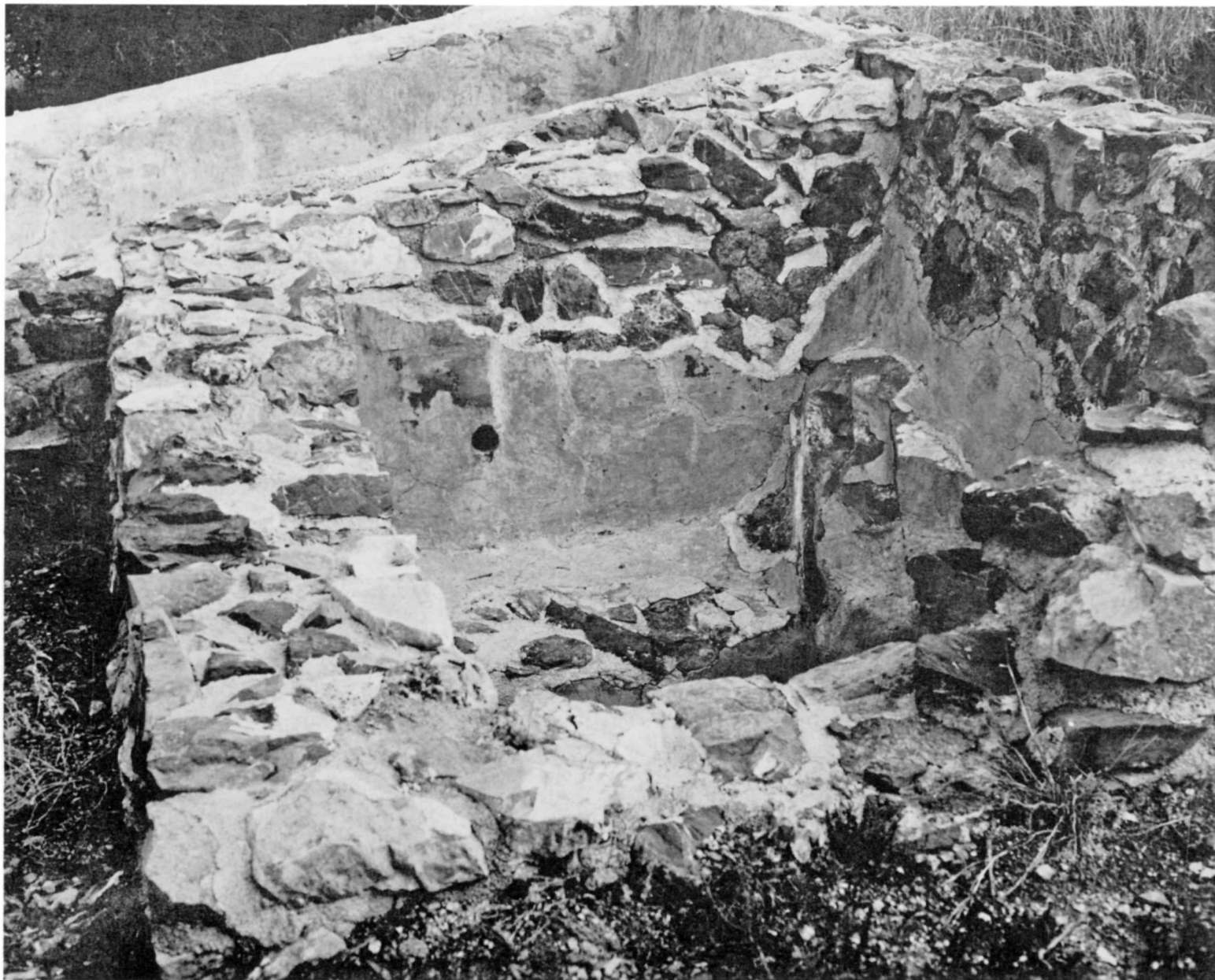
HS 068: View looking north.



HS 069: View looking northwest.



HS 070: View looking southwest.



HS 071: View looking north.



HS 072.



HS 073: View looking north.



HS 074.



HS 077: View looking east.



HS 078: View looking north.



HS 102: View looking northwest



HS 103: View looking north.



HS 104: View looking northwest.



HS 105: View looking northwest.



HS 107: View looking south.



HS 109: View looking east.



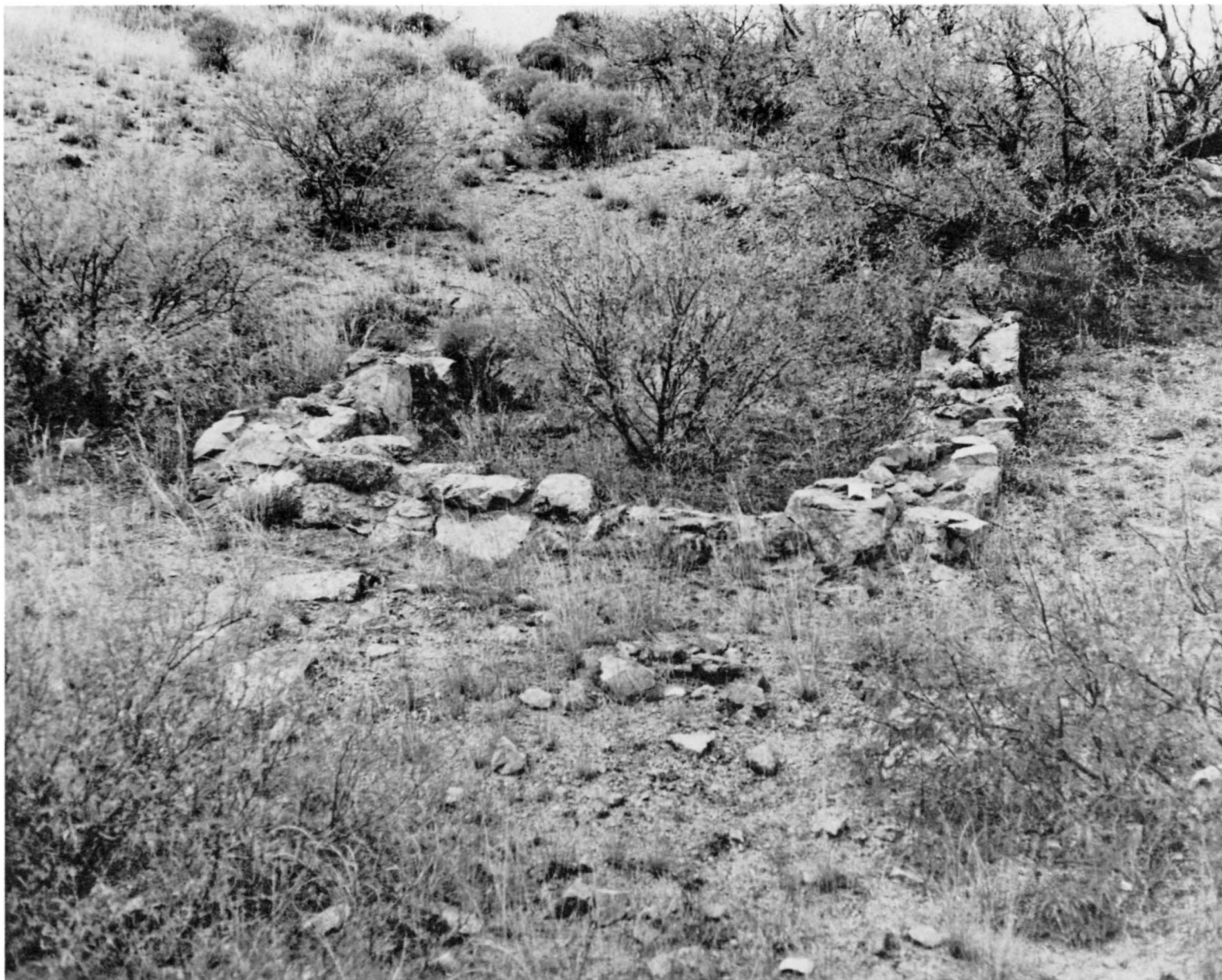
HS 110: View looking northwest.



HS 111: View looking northwest.



HS 112: View looking southeast.



HS 113: View looking northwest.



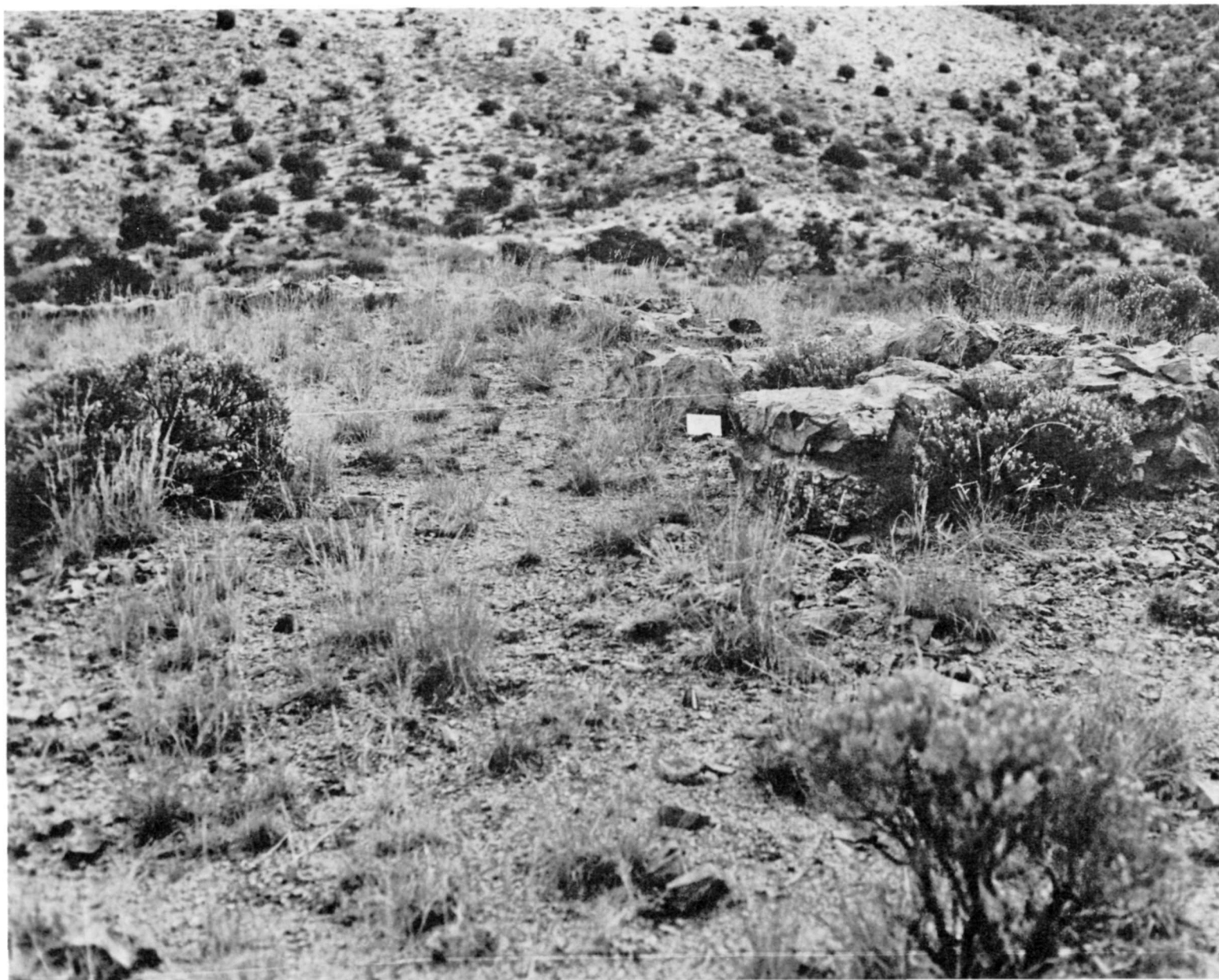
HS 114: View looking south.



HS 115: View looking south.



HS 116: View looking west.



HS 150: View looking east.



HS 151.



HS 152: View looking west.



HS 153: View looking southwest.



HS 154: View looking northwest.



HS 200: View looking north.



HS 201: View looking north.



HS 202: View looking south.



HS 204.



HS 205: View looking south.



HS 206.



HS 208.



HS 210.



HS 211.



HS 212.



HS 213.

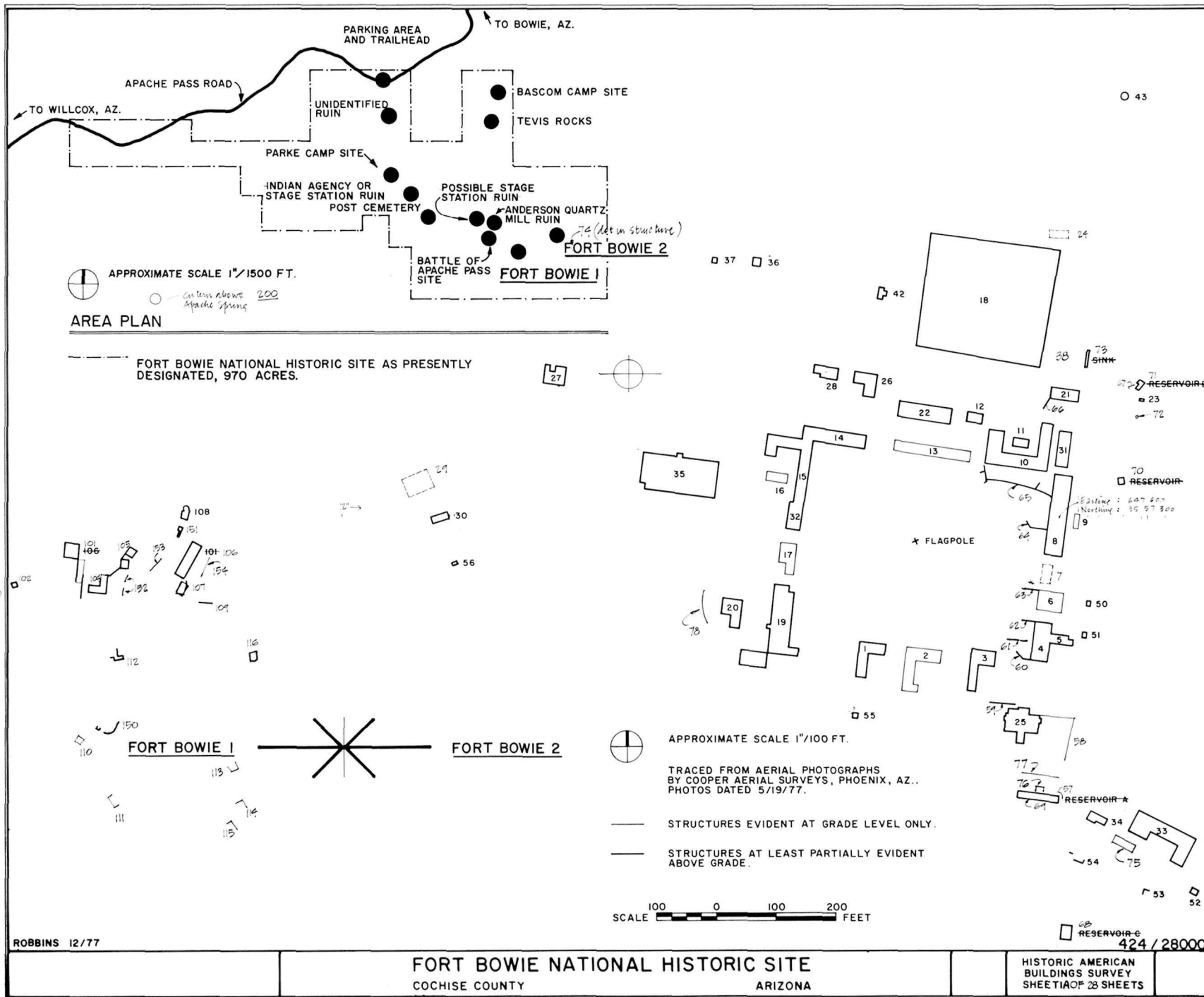


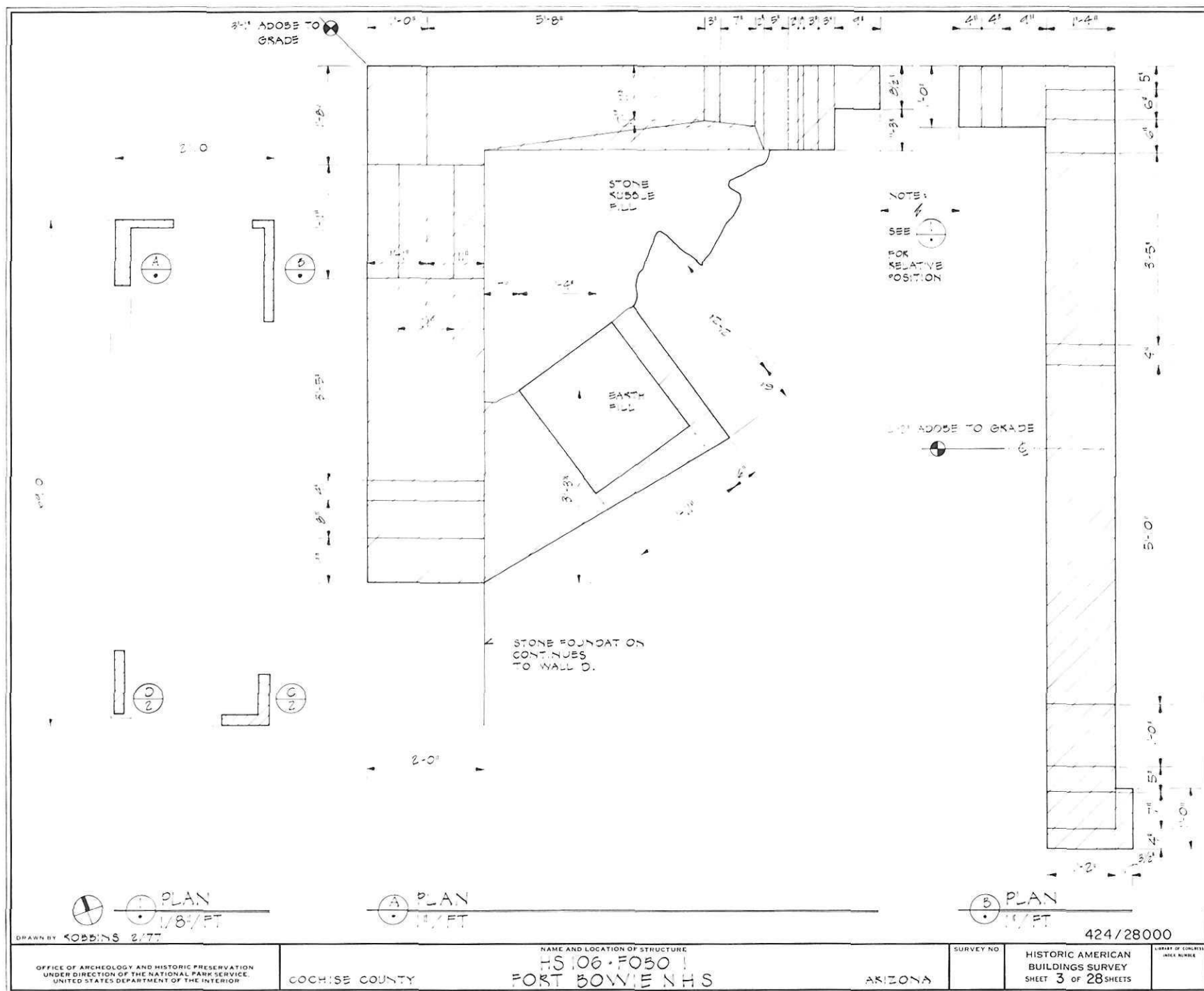
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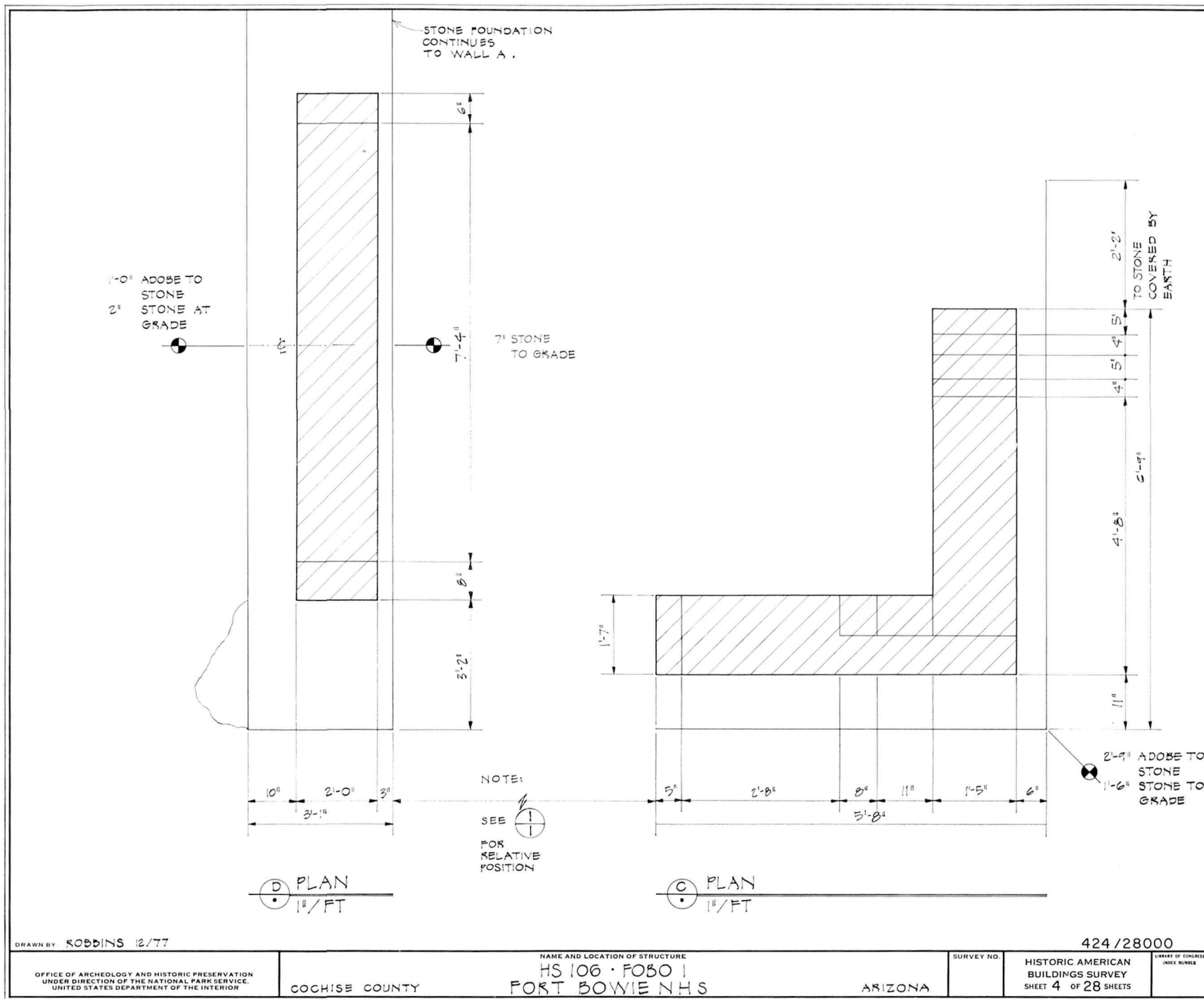
VII. Drawings

- A. Historic American Buildings Survey - Survey No. Ariz. 63, 1967.

These drawings are also recorded at the Denver Service Center,
National Park Service, as Drawing Number 424/28000, 28 sheets.







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424/28000

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UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

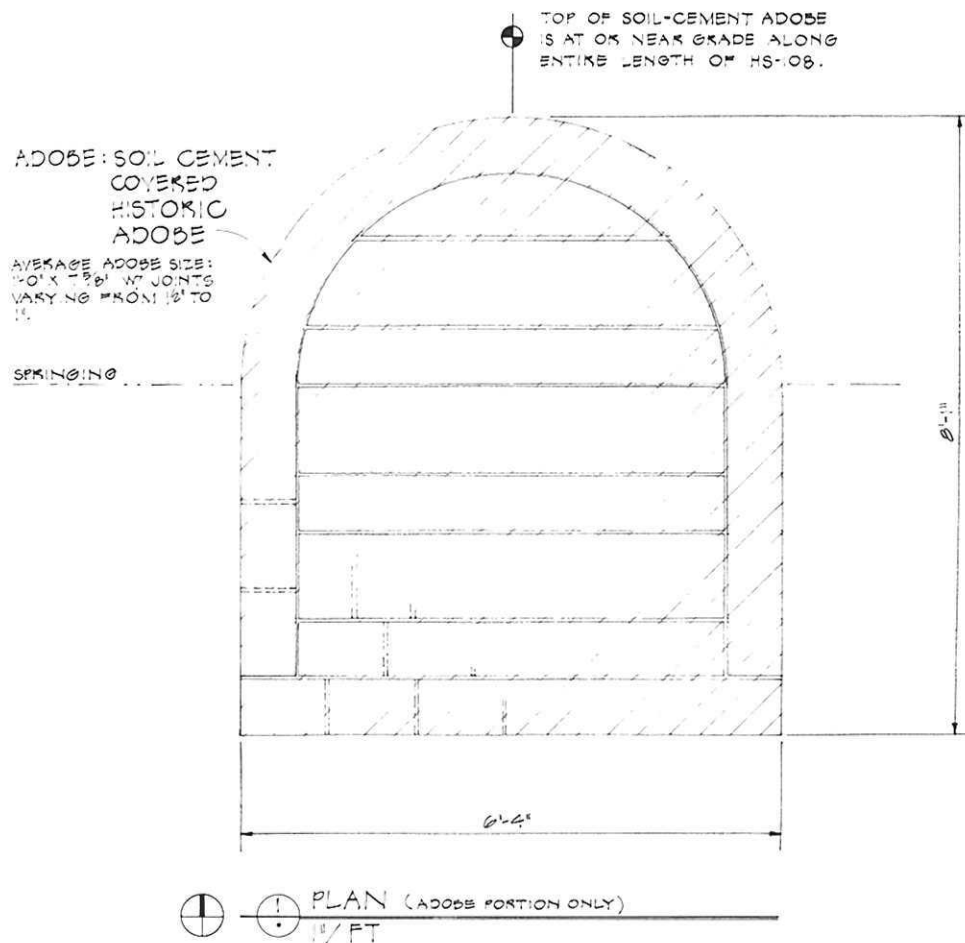
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HS 106 • FOBO I
FORT BOWIE NHS

ARIZONA

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HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 4 OF 28 SHEETS

SURVEY OF CONCRETE
INDEX NUMBER



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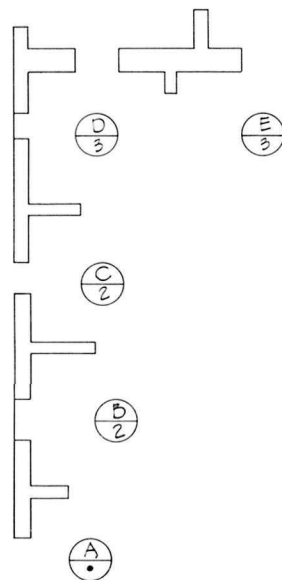
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ARIZONA

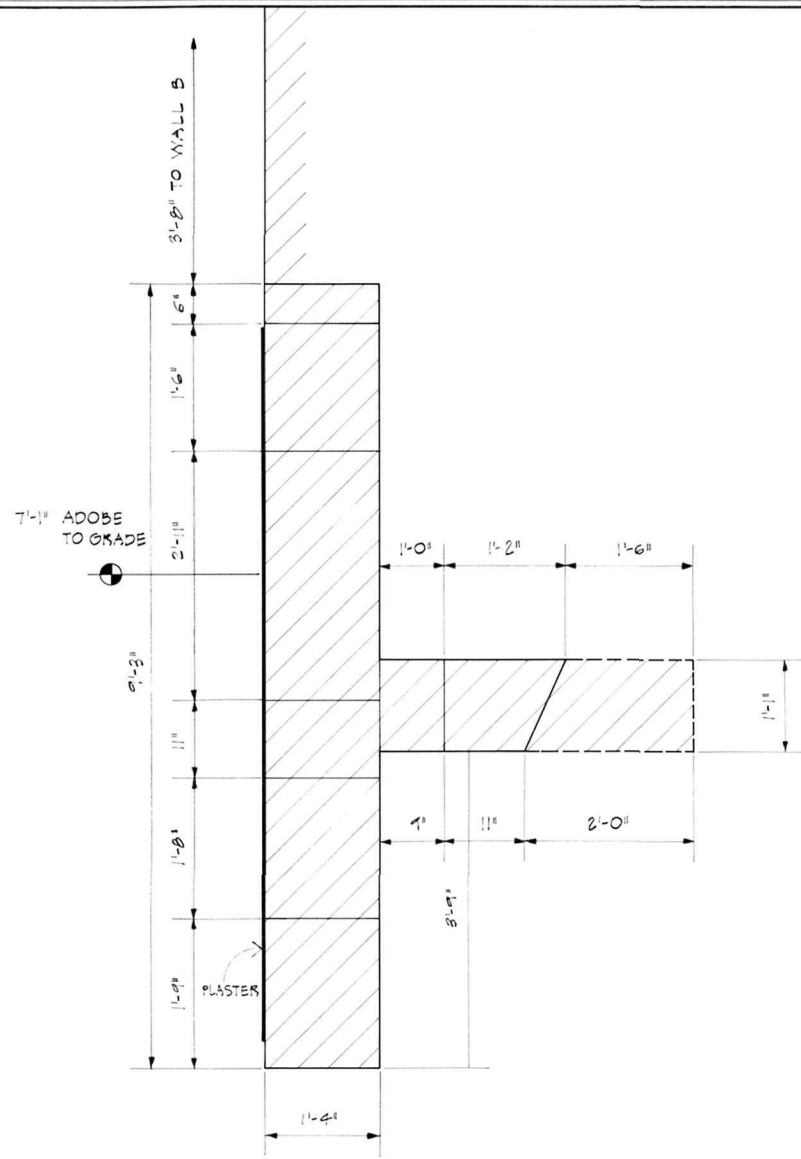
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PLAN
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PLAN
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COCHISE COUNTY

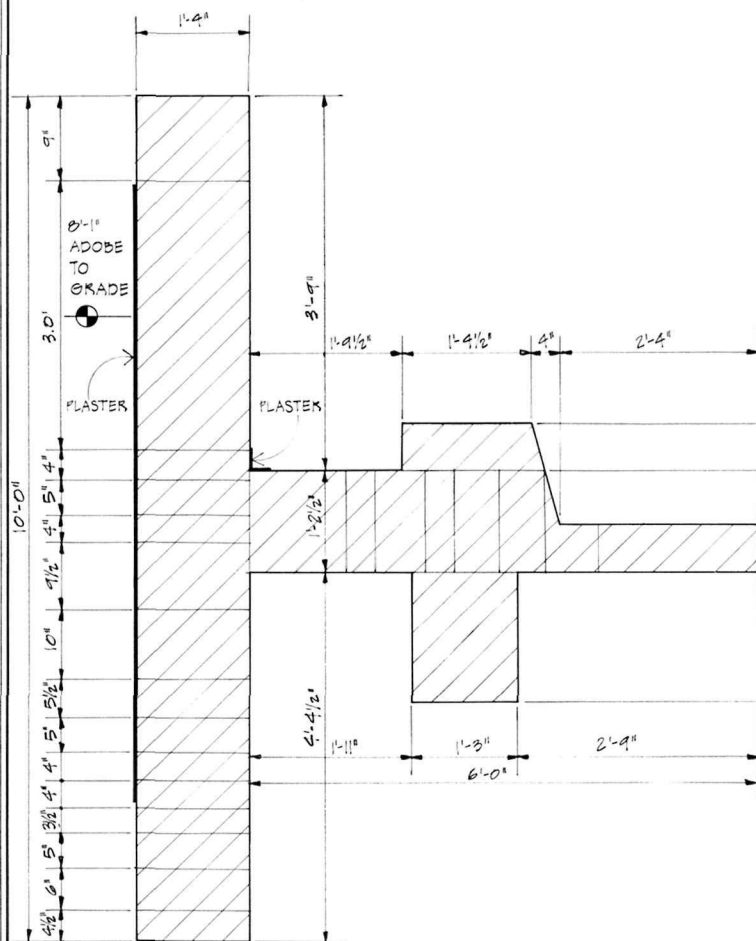
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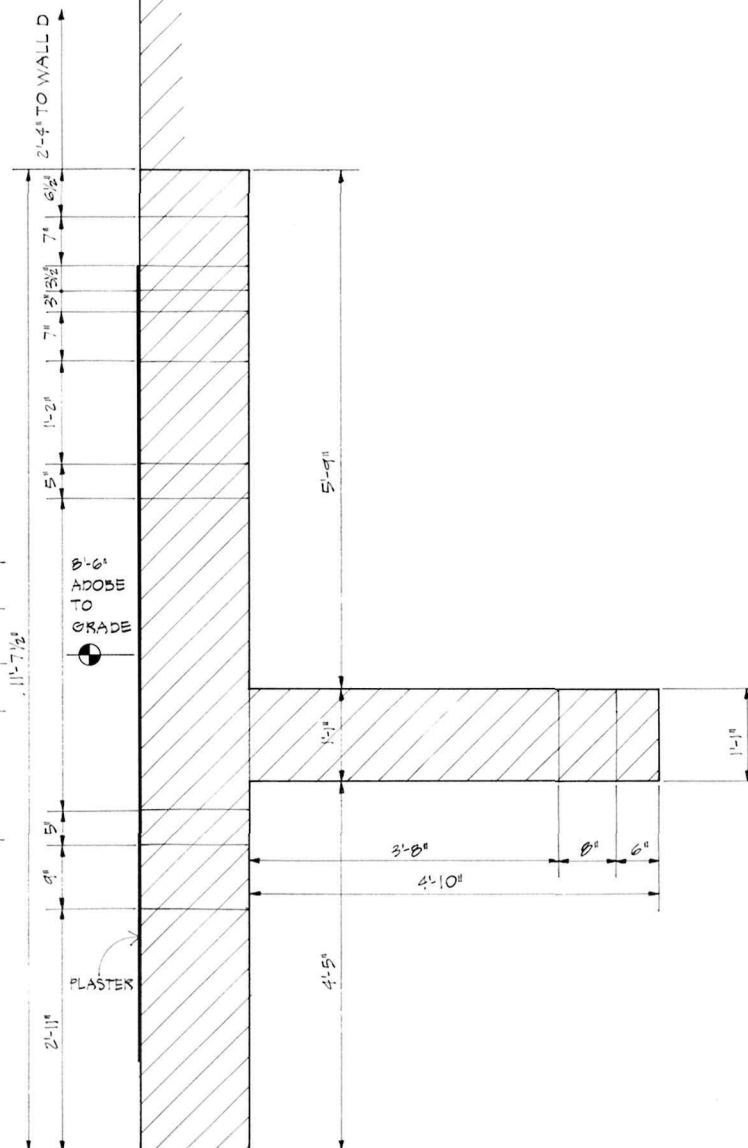
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B PLAN
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C PLAN
1" / FT

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COCHISE COUNTY

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FORT BOWIE N H S

ARIZONA

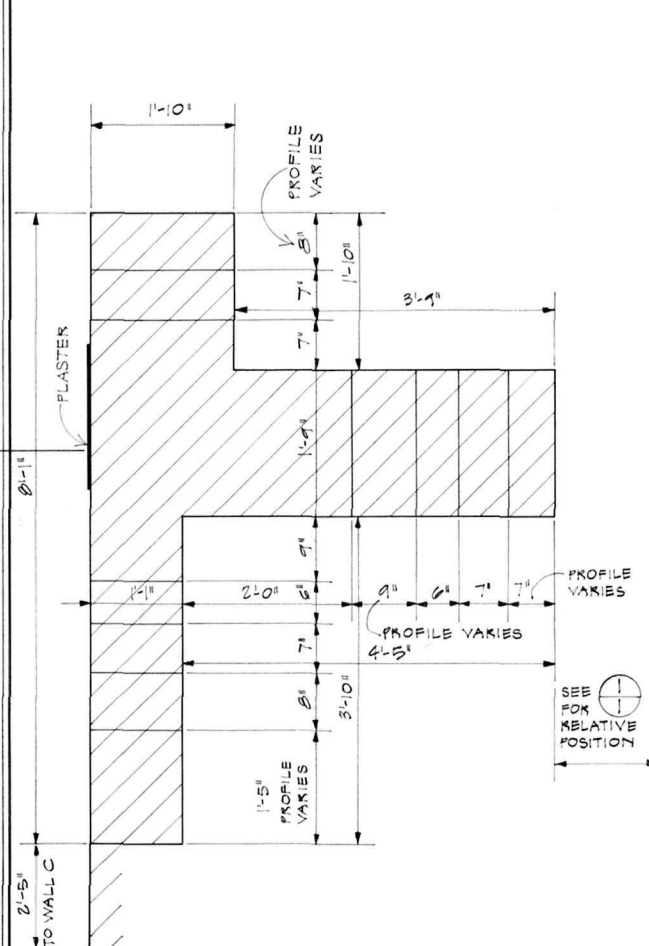
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SHEET 7. OF 28 SHEETS

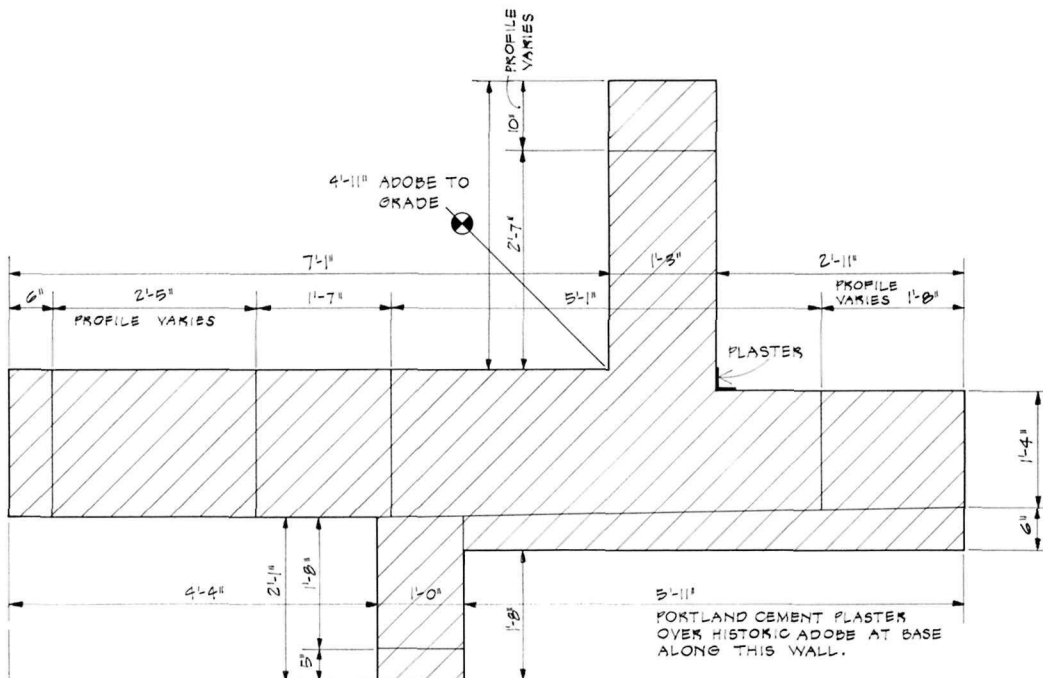
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7'-4" ADOBE TO GRADE



D PLAN
1" / FT



E PLAN
1" / FT

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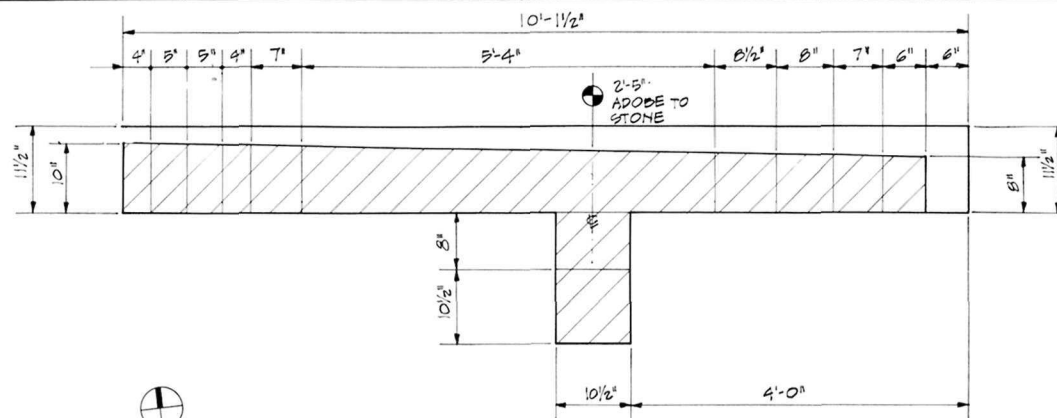
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SURVEY NO.

HISTORIC AMERICAN
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SHEET 8 OF 28 SHEETS

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ADOBE: HISTORIC,
SOIL-CEMENT CAPPED.
STONE: KUBBLE, UNCOURSSED.

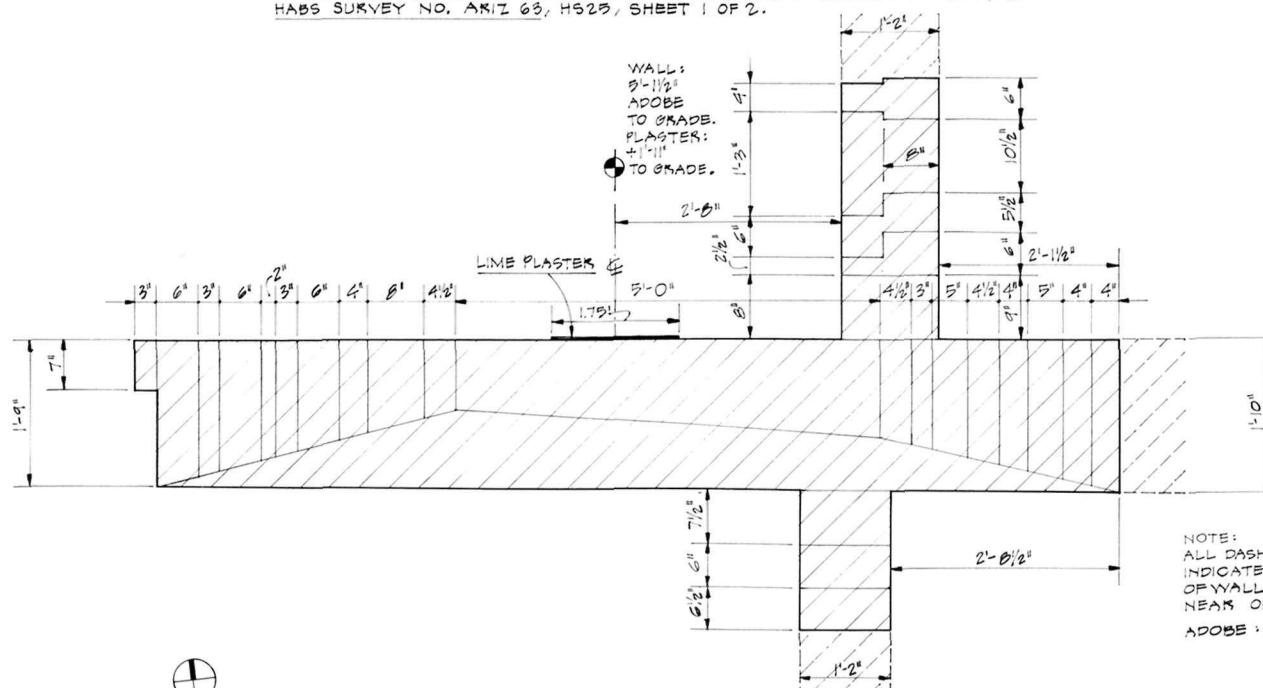


PLAN · HS 25 · COMMANDING OFFICER'S QUARTERS

ADOBE PORTION

1" = 1' FT

FOR POSITION OF THIS WALL RELATIVE TO THE STONE PORTION OF HS 25, SEE
HABS SURVEY NO. ARIZ 63, HS 25, SHEET 1 OF 2.



NOTE:
ALL DASHED LINE AREAS
INDICATE THAT EVIDENCE
OF WALL CONTINUES
NEAR OR AT GRADE.
ADOBE: HISTORIC, SOIL-
CEMENT CAPPED.



PLAN · HS 3 · OFFICERS' QUARTERS

1" = 1' FT

DR. IN CH. ROBBINS 12/77

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NAME AND LOCATION OF STRUCTURE
HS 3 AND HS 25 · FOBO 2
FORT BOWIE N H S

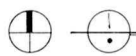
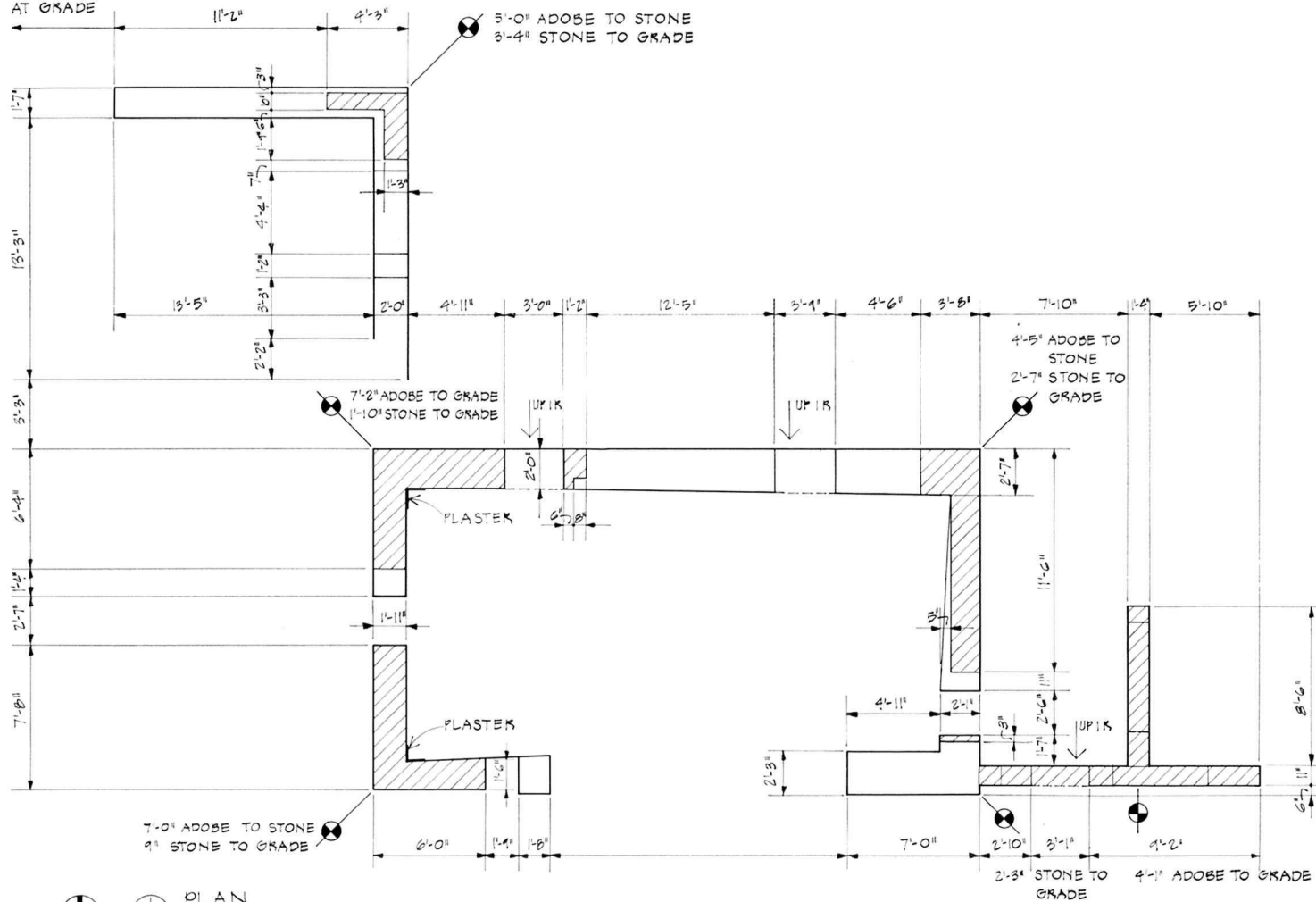
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HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 9 OF 28 SHEETS

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INDEX NUMBER

EVIDENCE OF
WALL CONTINUES
AT GRADE



PLAN

APPROX 1/4" / FT

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424 / 28000

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UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

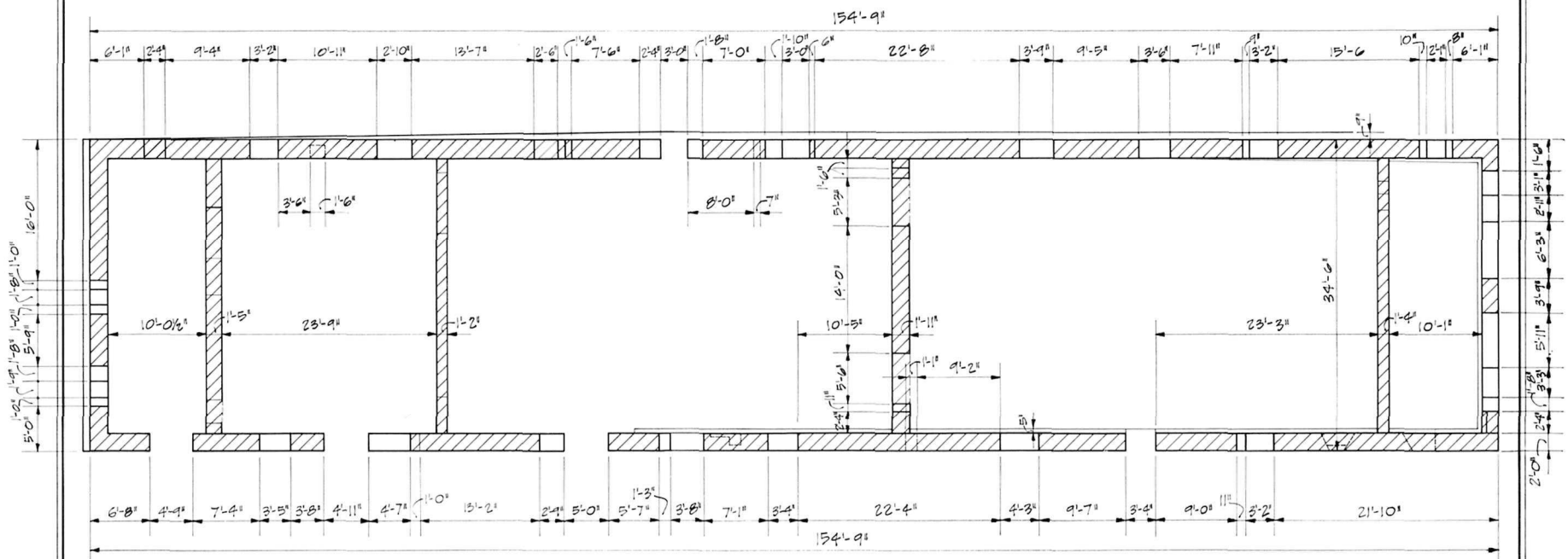
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HS 4 AND 5 • OFFICERS' QUARTERS • FOB 2
FORT BOWIE N H S

ARIZONA

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HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 10 OF 28 SHEETS

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PLAN
1/8" / FT

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424/28000

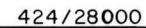
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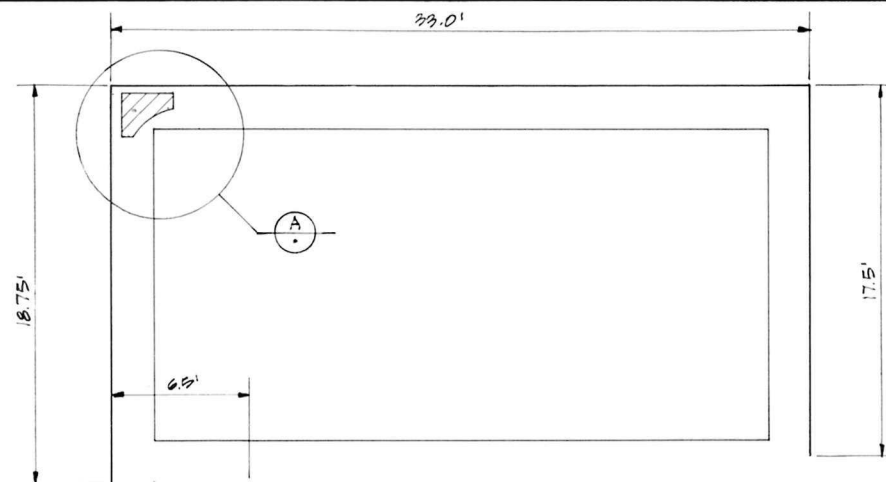
COCHISE COUNTY, ARIZONA
HS 8 CAVALRY BARRACKS - FOB 2
FORT BOWIE NATIONAL HISTORIC SITE

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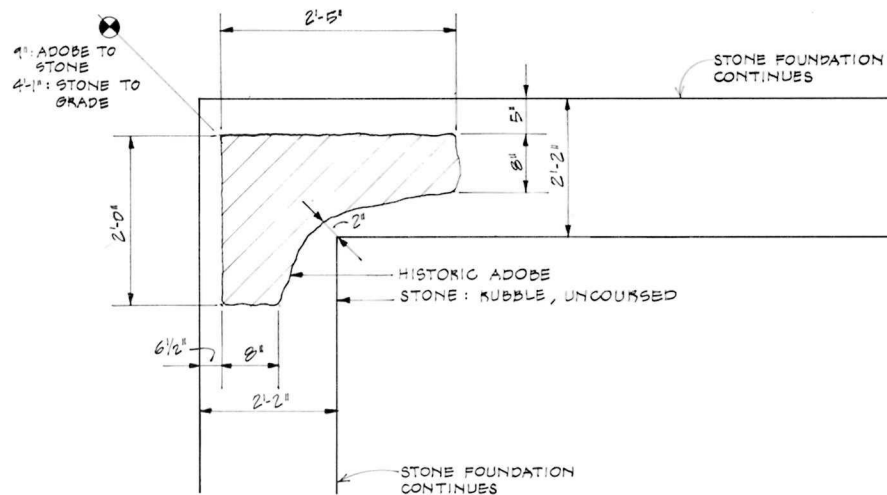
HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 11 OF 28 SHEETS

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PLAN
1/4" = 1' FT



PLAN
1" = 1' FT

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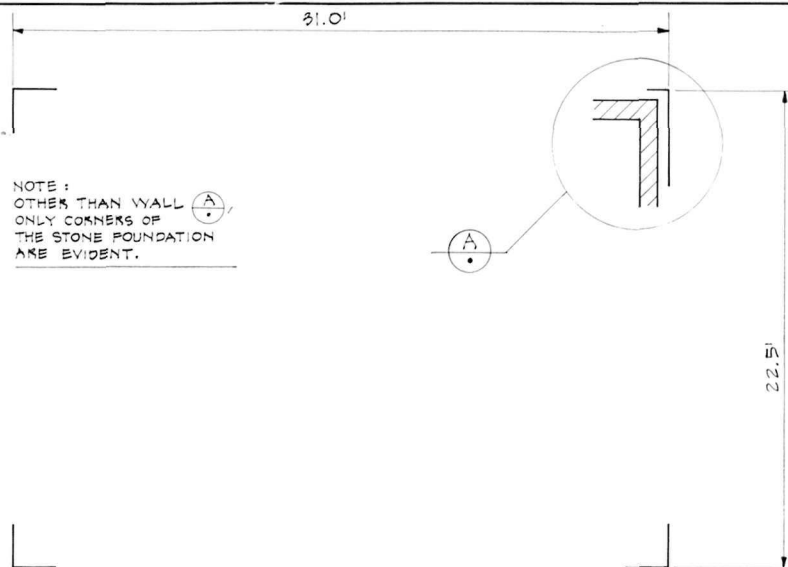
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FORT BOWIE N.H.S

ARIZONA

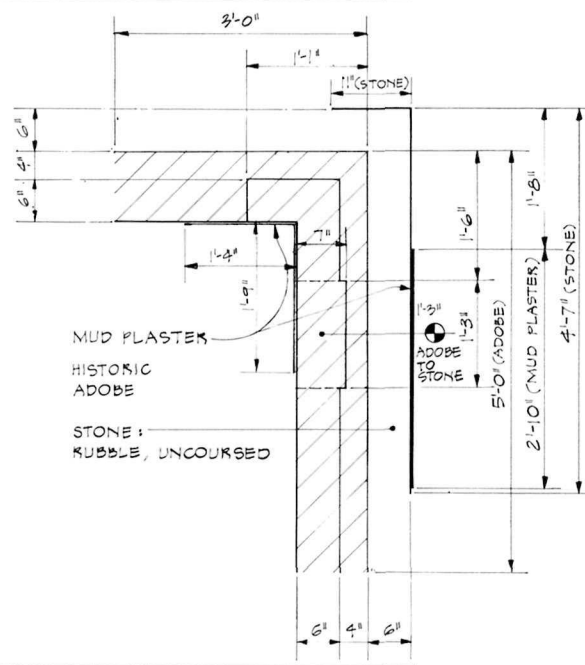
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HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 13 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER



PLAN
1/4" / FT



PLAN
1" / FT

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UNDER DIRECTION OF THE NATIONAL PARK SERVICE,
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

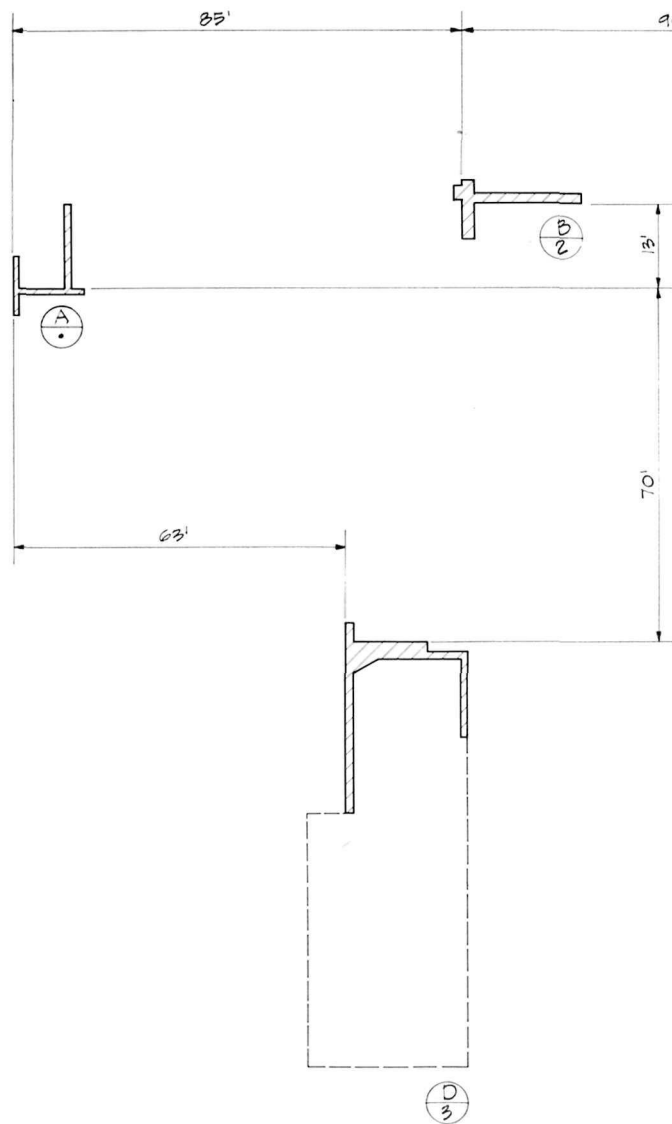
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HS 12 • OIL HOUSE • FORD 2
FORT BOWIE N HS

ARIZONA

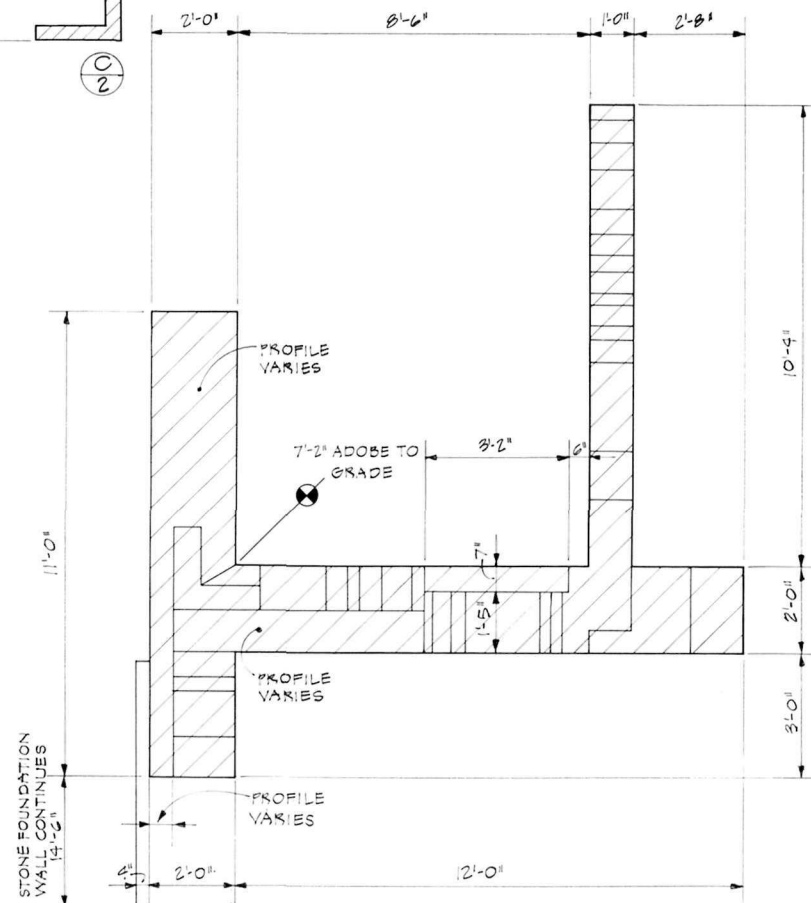
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HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 14 OF 28 SHEETS

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INDEX NUMBER



PLAN
1/16" / FT



PLAN
1/2" / FT

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UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

NAME AND LOCATION OF STRUCTURE
HS 14 AND 15-FOBO2
FORT BOWIE NHS

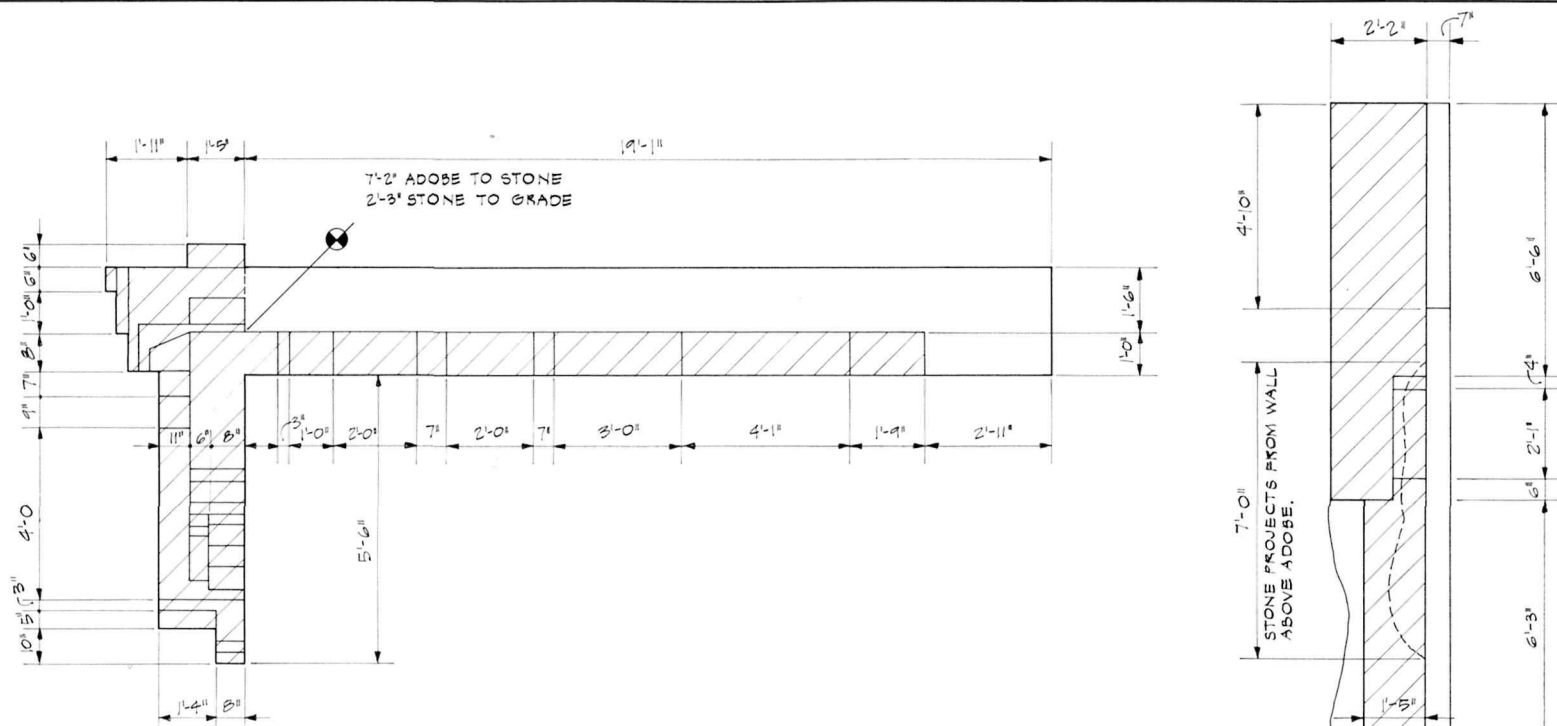
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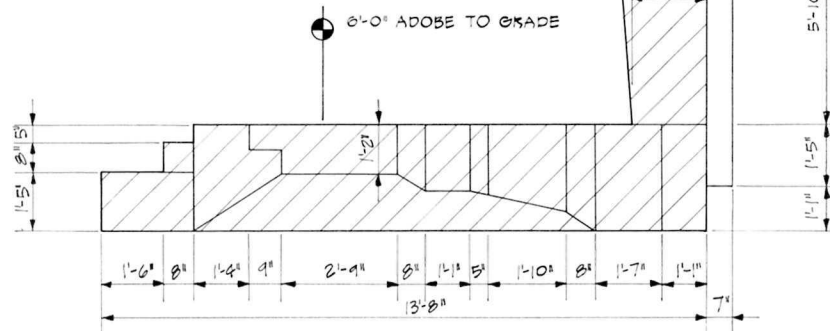
HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 15 OF 28 SHEETS

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INDEX NUMBER

424 / 28000



PLAN
1/2" = 1'-0"



PLAN
1/2" = 1'-0"

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UNDER DIRECTION OF THE NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

NAME AND LOCATION OF STRUCTURE
HS 14 AND 15 • F080 2
FORT BOWIEN HS

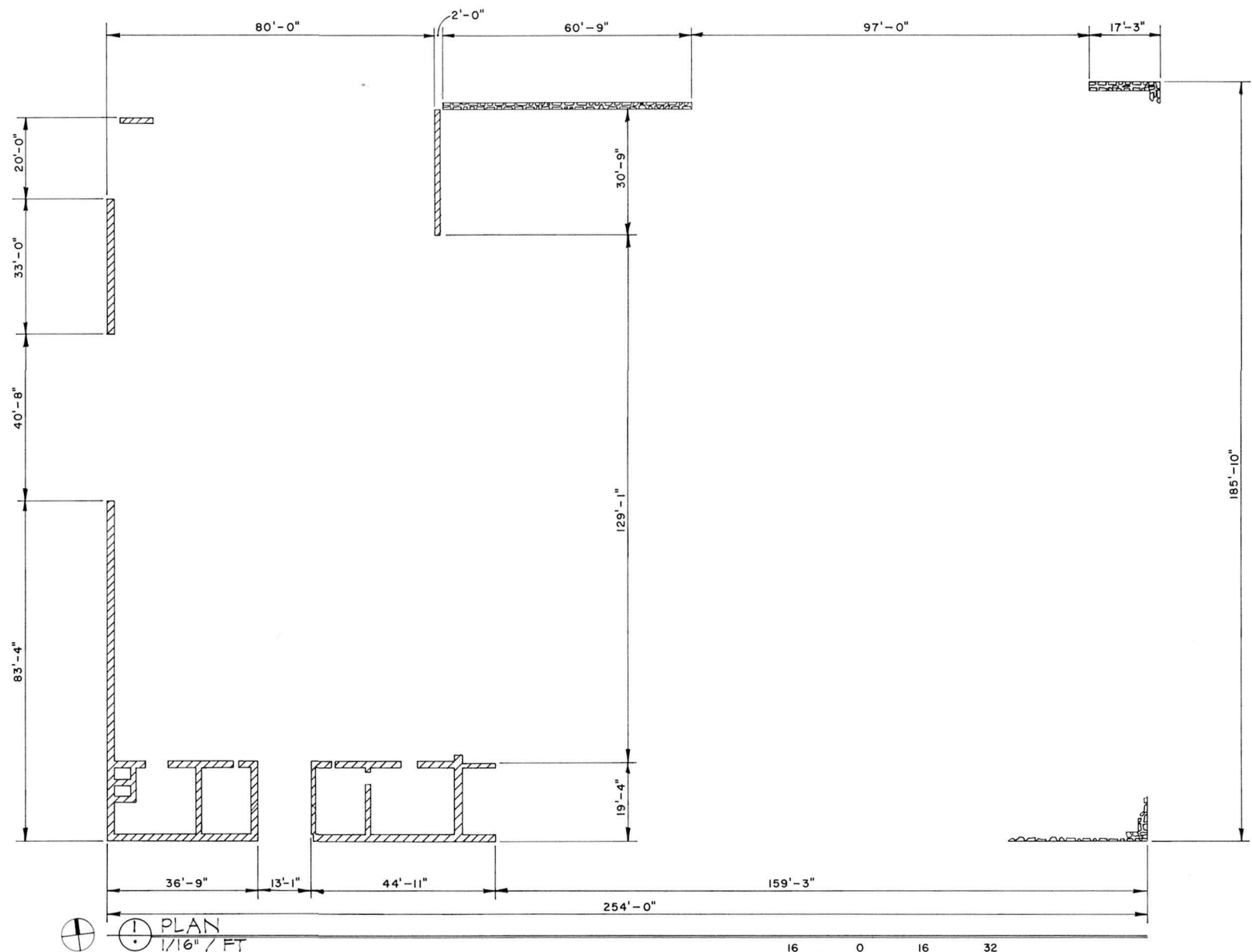
ARIZONA

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HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 16 OF 28 SHEETS

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INDEX NUMBER

424/28000



DRAWN BY R.W. EGE FROM HABS SURVEY ARIZ. 63, R. GIEBNER, 1967 AND MEASUREMENTS, 1977, ROBBINS, 12/77

424 / 28000

OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE,
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY, ARIZONA

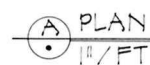
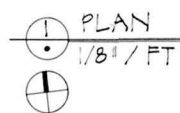
NAME AND LOCATION OF STRUCTURE
HS-18 CORRALS-FOBO 2

FORT BOWIE NATIONAL HISTORIC SITE

SURVEY NO.

HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 18 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER



OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE,
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE
HS 20 - KITCHEN-MESSHALL - FOB 02
FORT BOWIE N H S

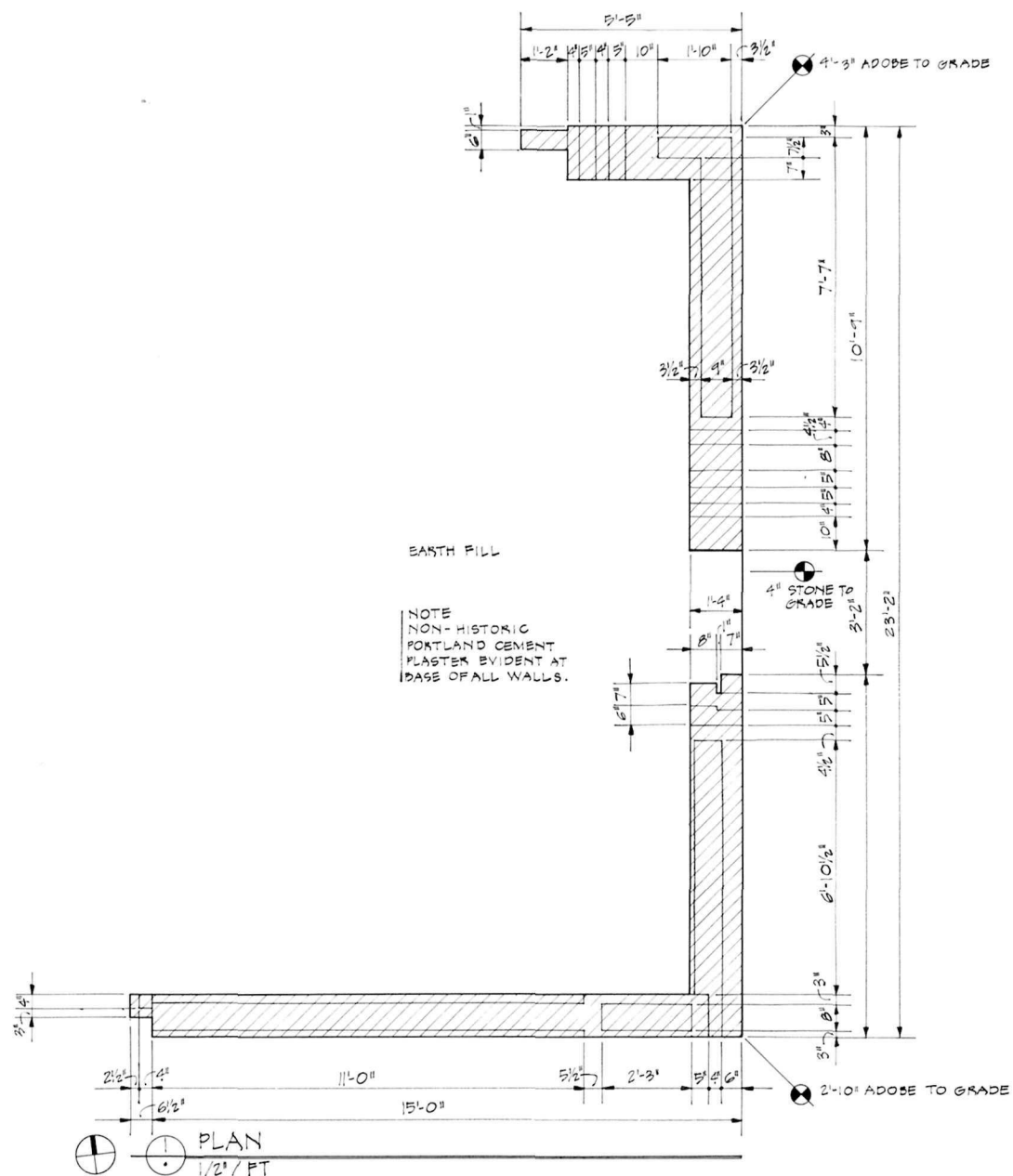
ARIZONA

	SURVEY NO.
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HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 19 OF 28 SHEETS

LIBRARY OF CONGRESS

424 / 28000



DRAWN BY ROBBINS 12/77

OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

HS 21 • BUTCHER SHOP • FOBO 2
FORT BOWIE N.H.S

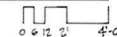
ARIZONA

SURVEY NO.

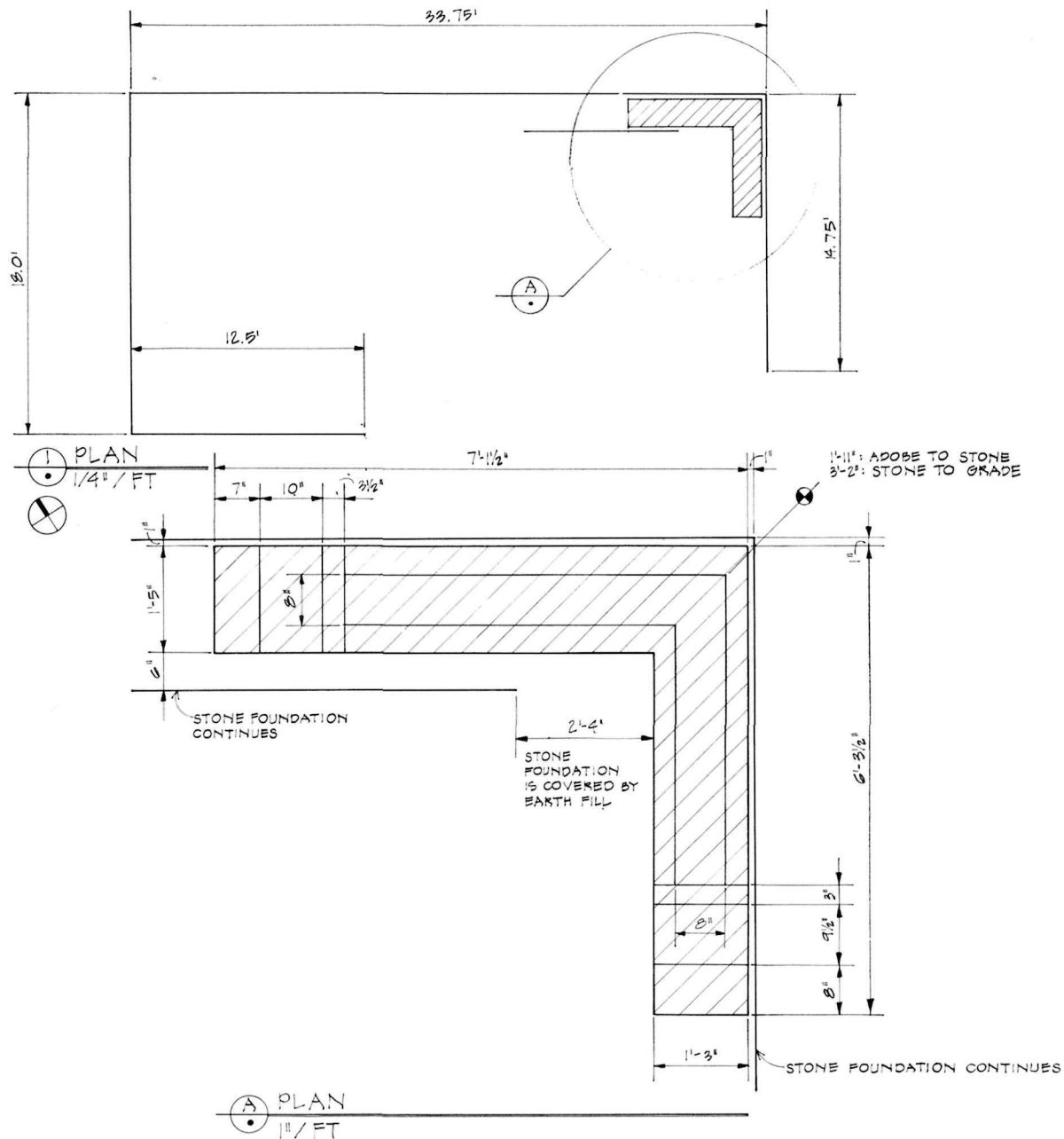
HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 20 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER

424 / 28000



424 / 28000



DRAWN BY: ROBBINS 12/77

424 / 28000

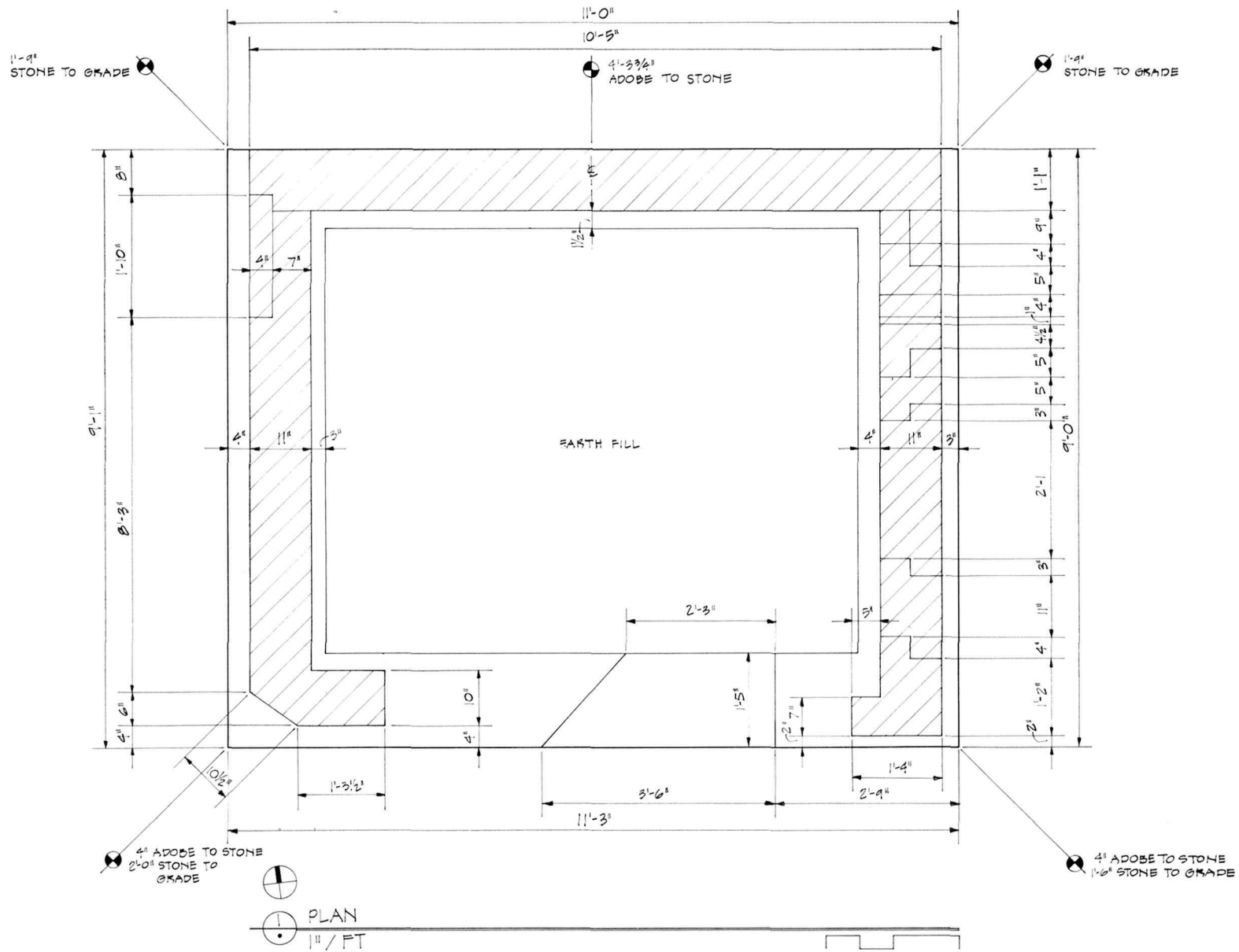
OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE,
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE
HS 34 • HOSPITAL STEWARDS QUARTERS • FOBO 2
COCHISE COUNTY FORT BOWIE N H S ARIZONA

SURVEY NO.

HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 23 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER



DRAWN BY ROBBINS 12/77

OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE,
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

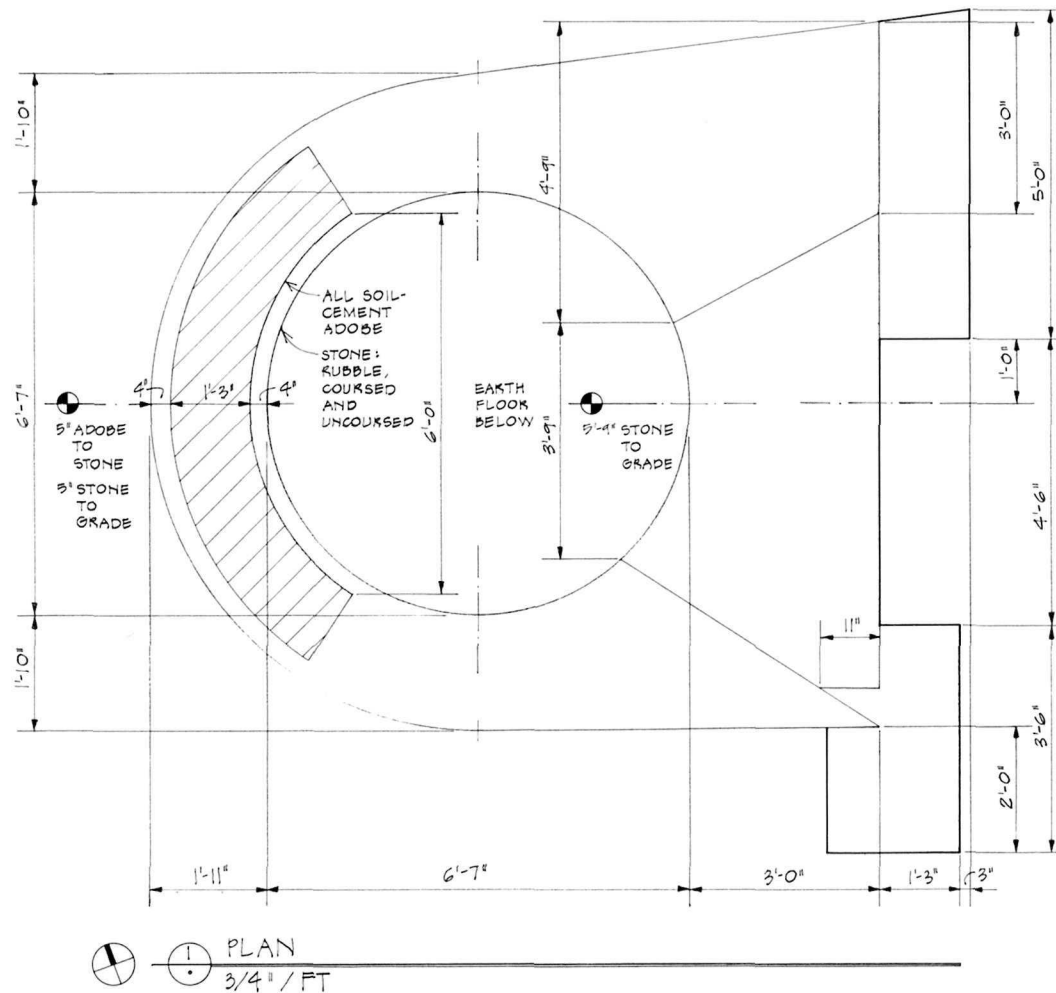
NAME AND LOCATION OF STRUCTURE
HS 37 • GUN SHED • F050 2
FORT BOWIE NHS

ARIZONA

SURVEY NO.

HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 25 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER



DRAWN BY ROBBINS 12/77

OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE,
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

NAME AND LOCATION OF STRUCTURE
HS 43 · LIME KILN · FOBO 2
FORT BOWIE N H S

ARIZONA

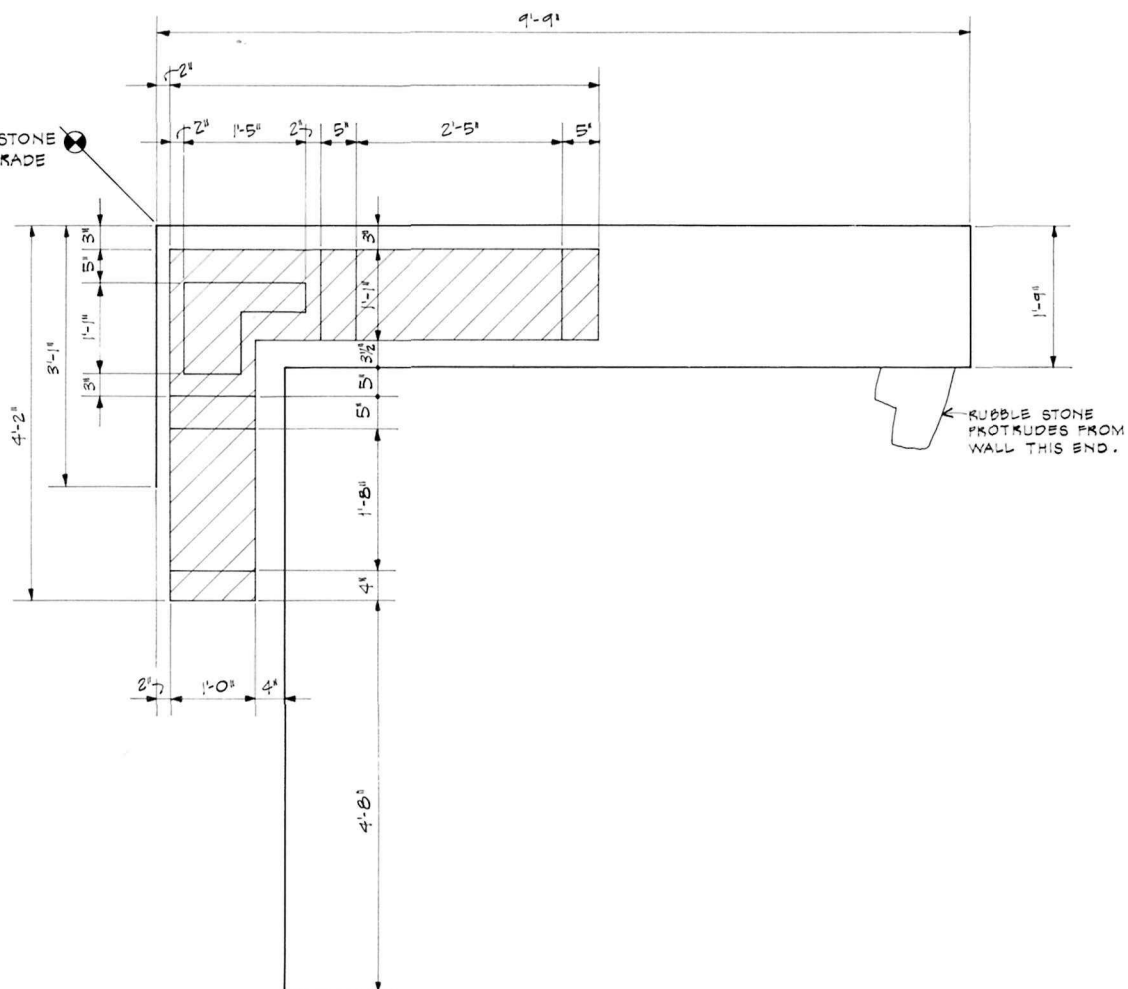
SURVEY NO.

HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 26 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER

424 / 28000

2'-4" ADOBE TO STONE
10" STONE TO GRADE



PLAN
1" = 1'-0"

DRAWN BY ROBBINS 12/77

424/28000

OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE,
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

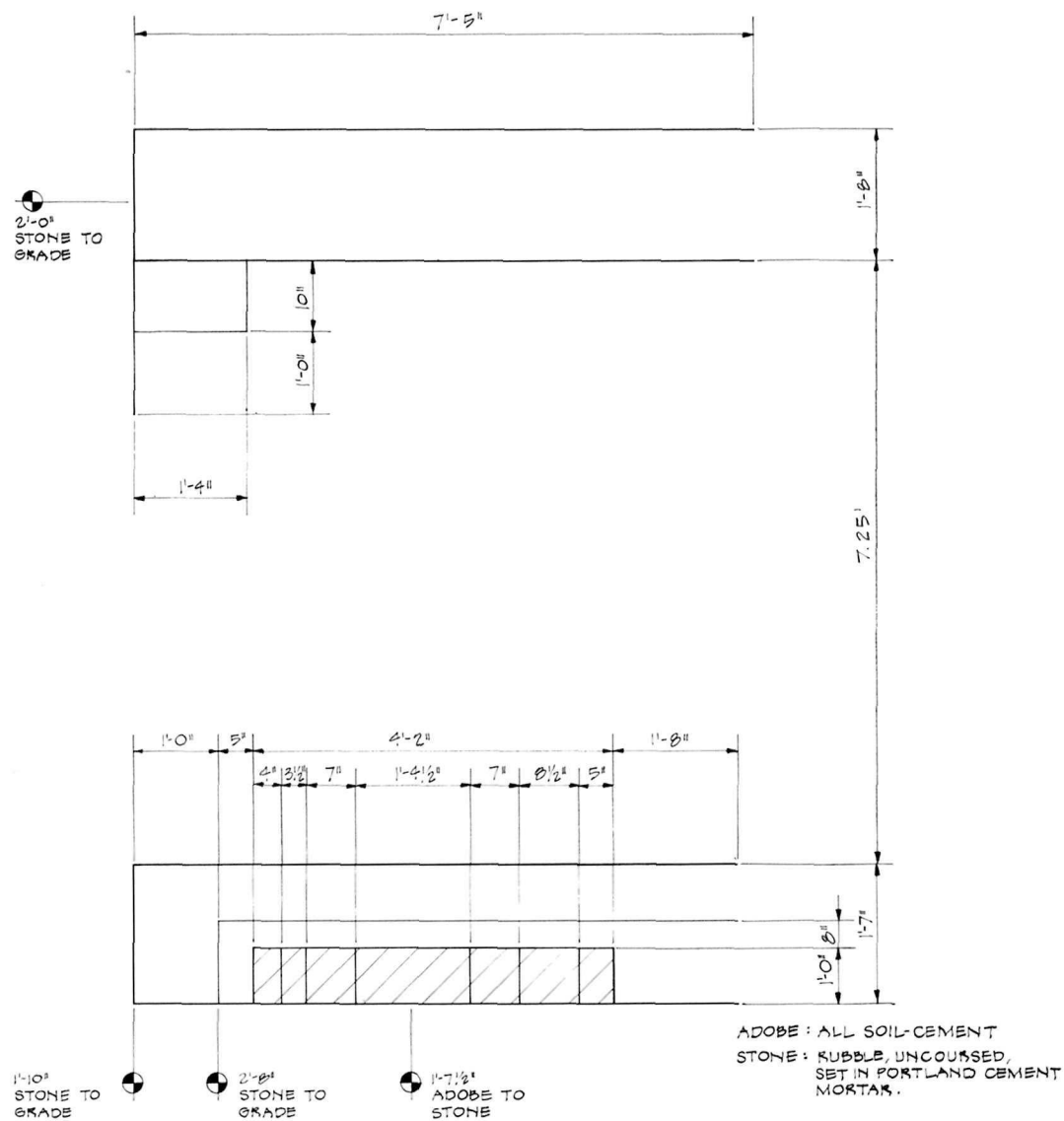
HS 51 • OUTBUILDING • FORT 2
FORT BOWIE N.H.S

ARIZONA

SURVEY NO.

HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 27 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER



PLAN
1" = 1'-0"

DRAWN BY: ROBBINS 12/77

424/28000

OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
UNDER DIRECTION OF THE NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

COCHISE COUNTY

HS 56 • OUTBUILDING • FOBO 2
FORT BOWIE N.H.S.

ARIZONA

SURVEY NO.

HISTORIC AMERICAN
BUILDINGS SURVEY
SHEET 28 OF 28 SHEETS

LIBRARY OF CONGRESS
INDEX NUMBER

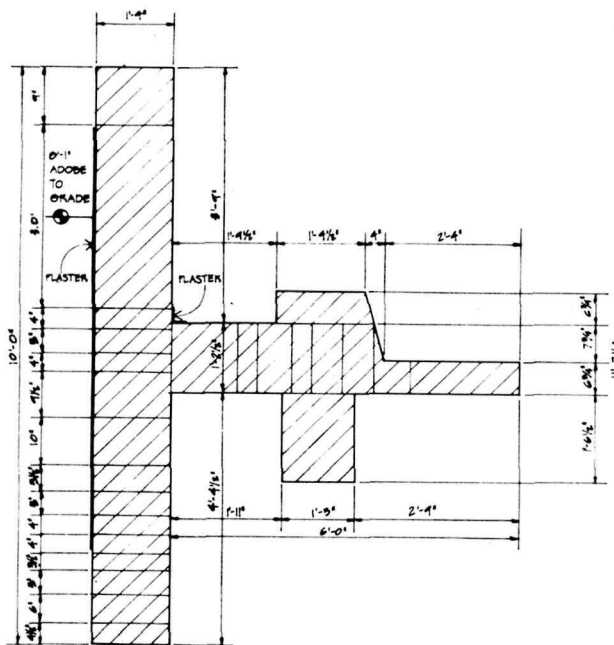
VII. Drawings

B. Historic Structure Report - Drawing 424/25000, 97 sheets.

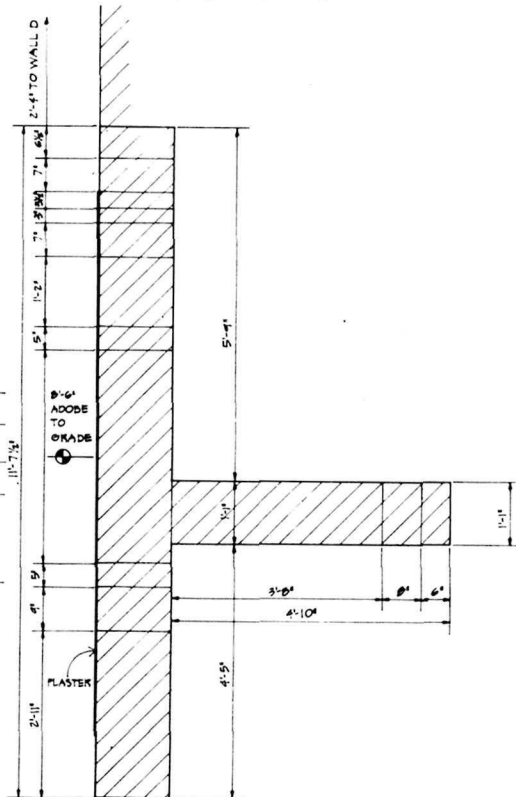


⊕ A PLAN
1/8" = 1' FT
HS 001
1977

⊕ B HS 001 - WALL A
PLAN
1" = 1' FT



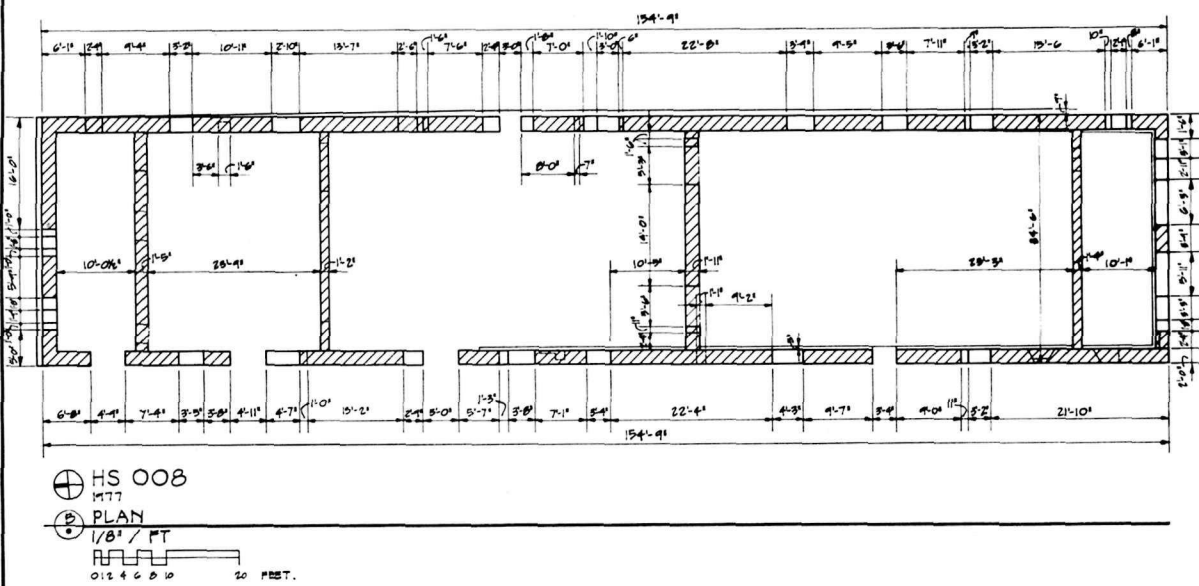
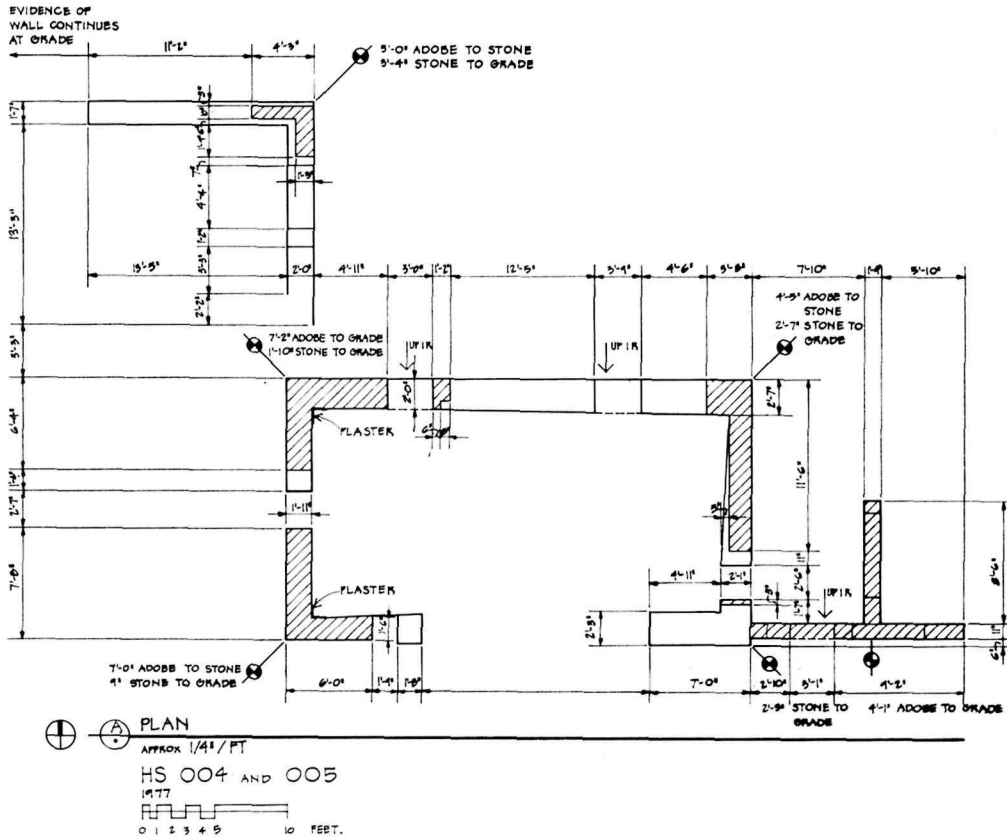
⊕ C HS 001 - WALL B
PLAN
1" = 1' FT



⊕ D HS 001 - WALL C
PLAN
1" = 1' FT

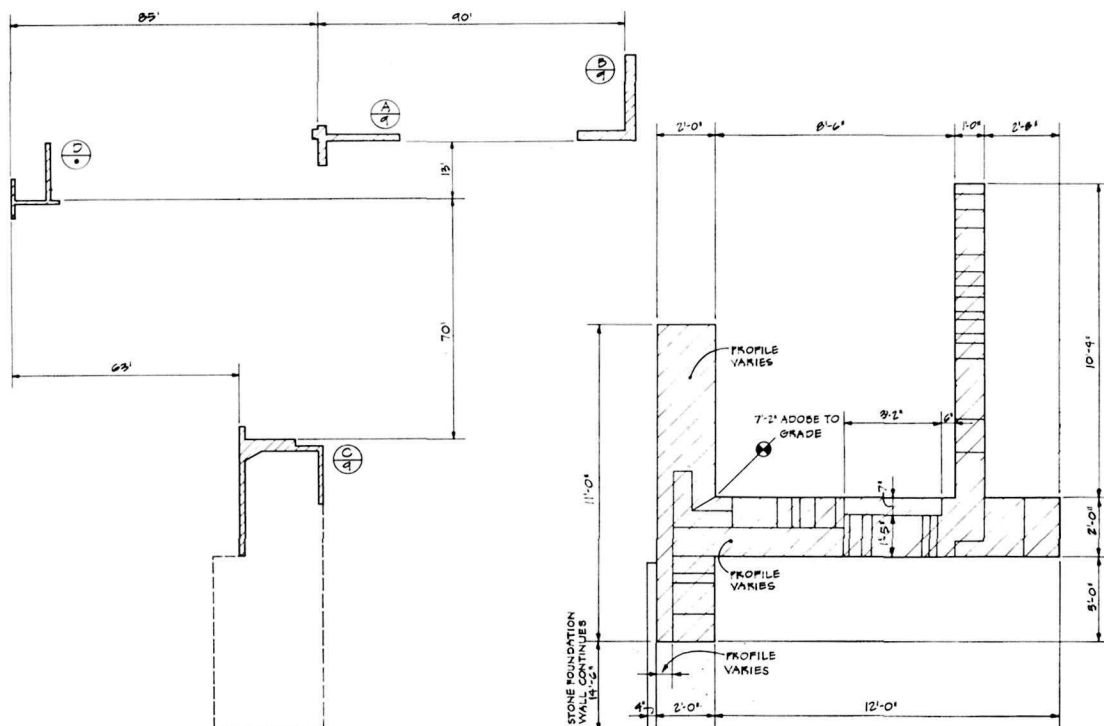
DESIGNED	28,000
DRAWN	181
CHECKED	4
DATE	1977

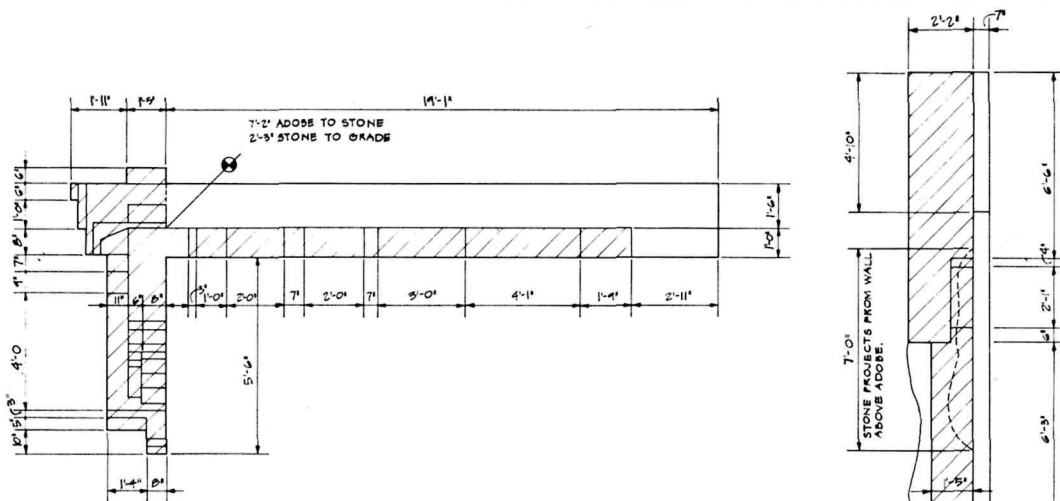
STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE



PREPARED
 DESIGNED
 FOR
 DRAWN
 CHECKED
 DATE
 APRIL 1978
 424
 28,000
 SHEET
 101
 6
 47

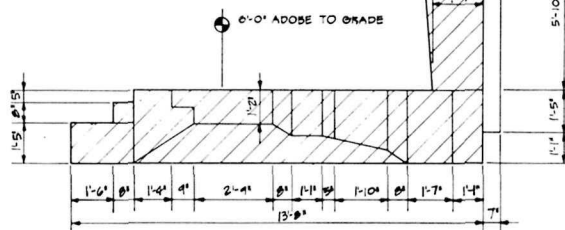
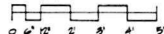
STABILIZATION OF ABOVE - GRADE ADOBE RUINS
 FORT BOWIE NATIONAL HISTORIC SITE

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE



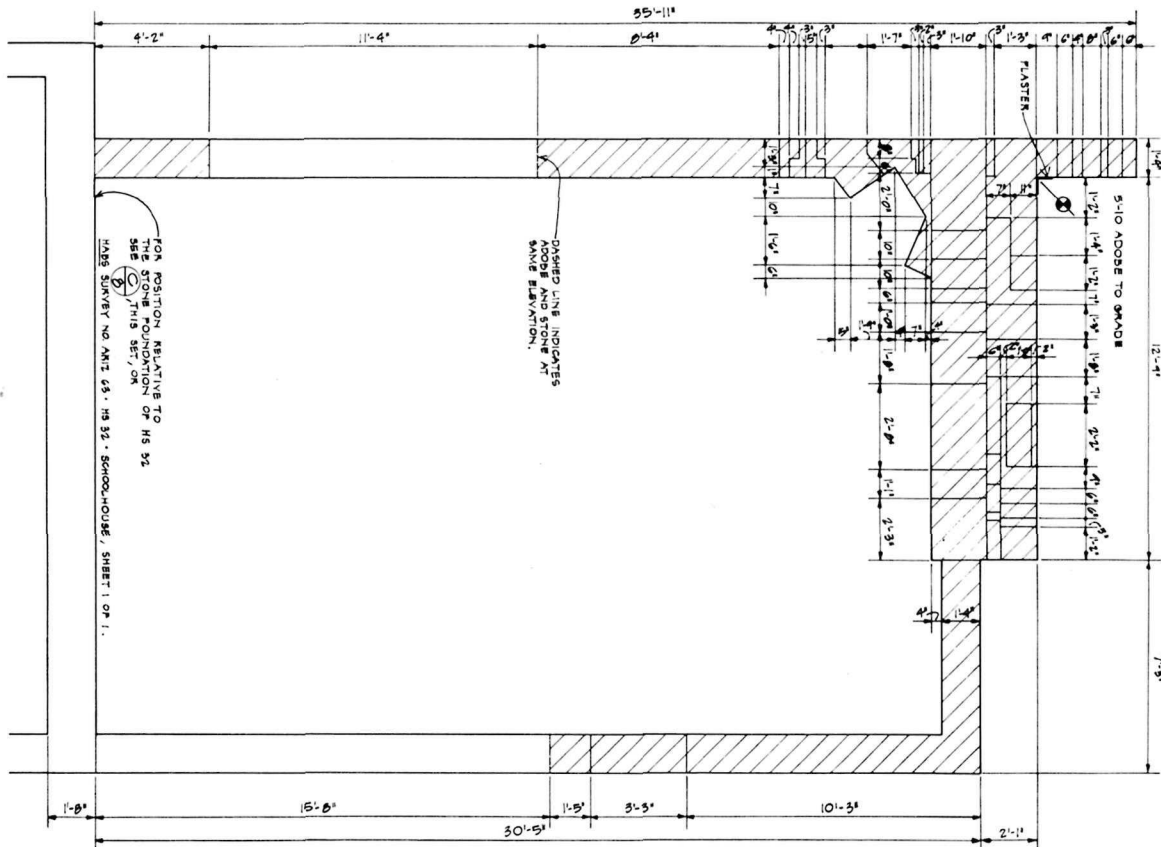
Ⓐ HS 014 AND 015 • WALL B • PLAN

1/2" / FT



Ⓑ HS 014 AND 015 • WALL C • PLAN

1/2" / FT

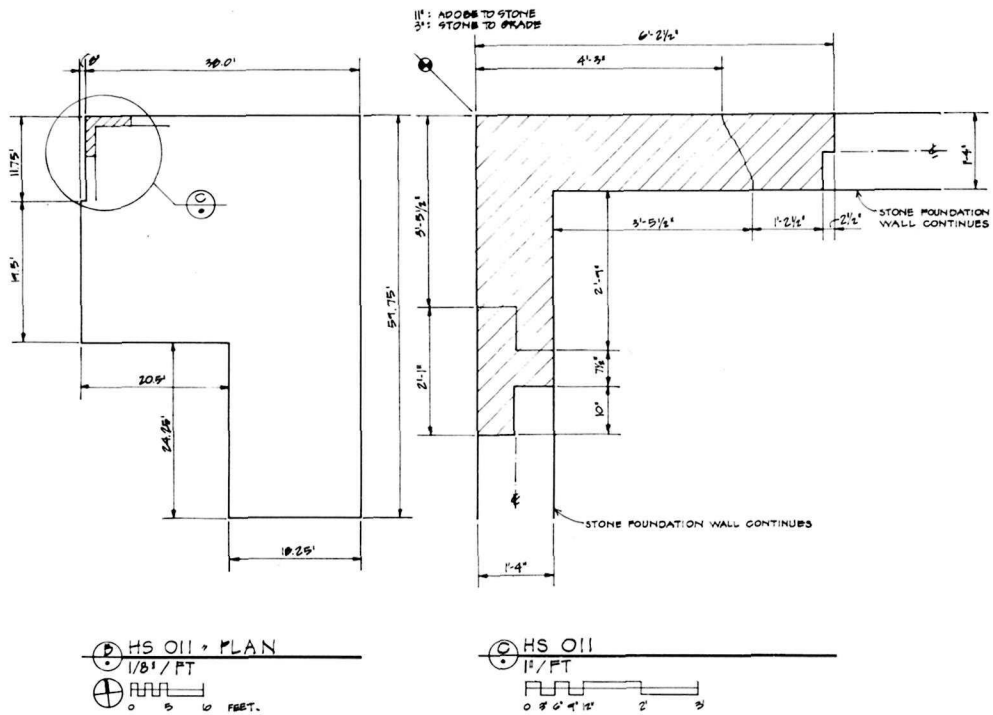
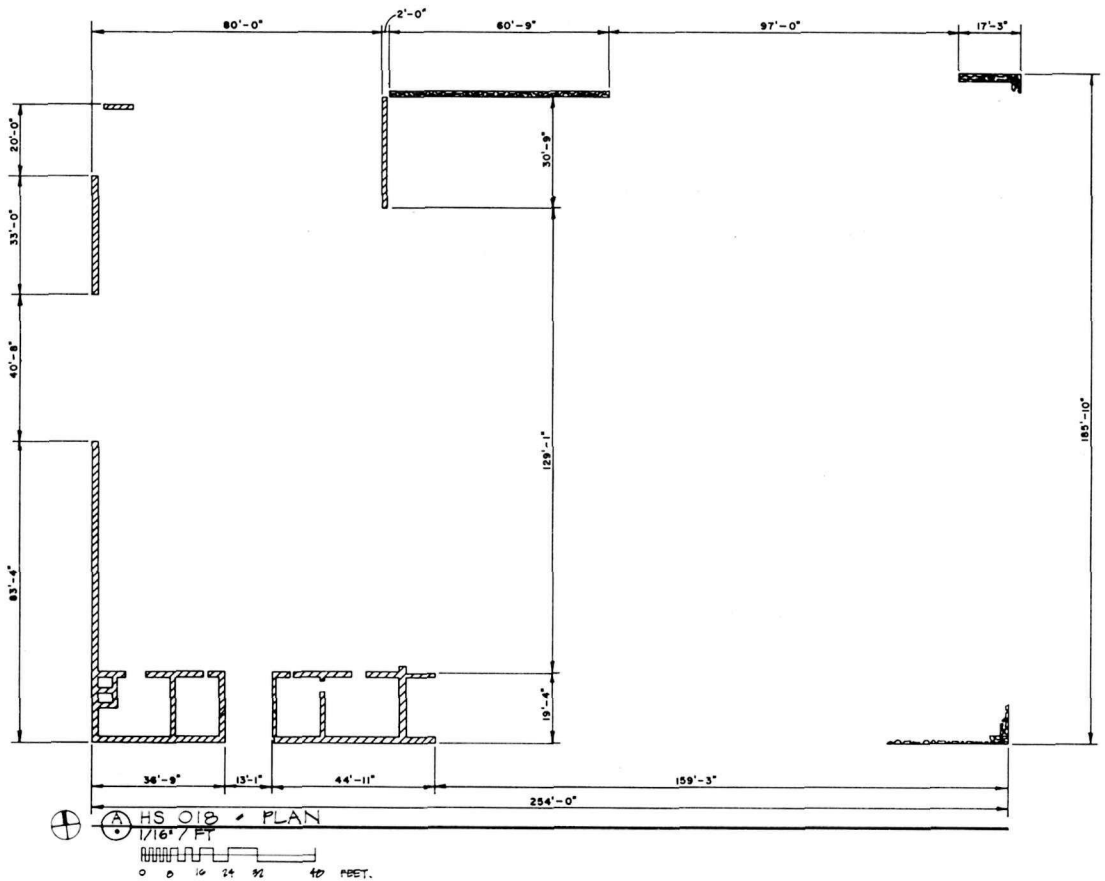


Ⓒ HS 014 AND 015 • WALL D • PLAN

1/2" / FT

DESIGNED ROBBINS	DRAWING NO. 424
CHECKED APRIL 1978	25,000
DATE	9

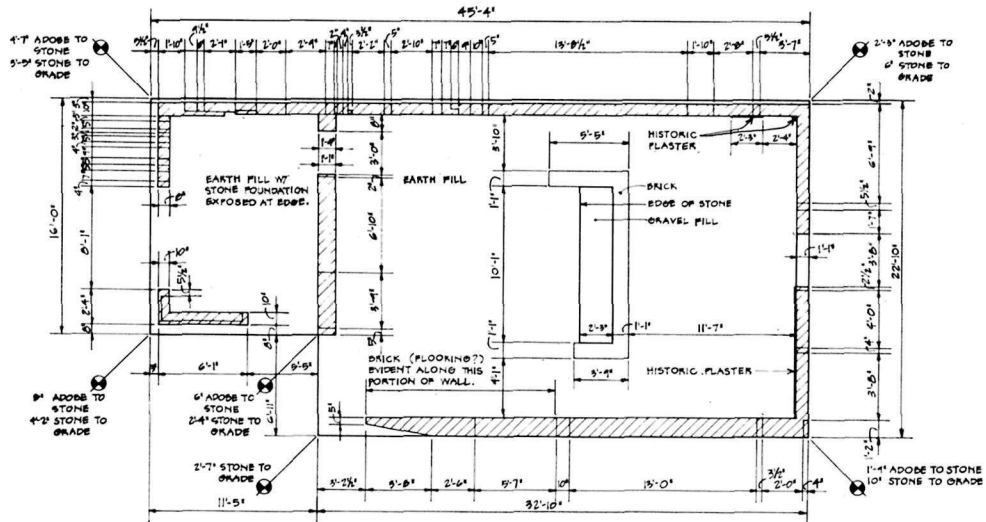
STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE



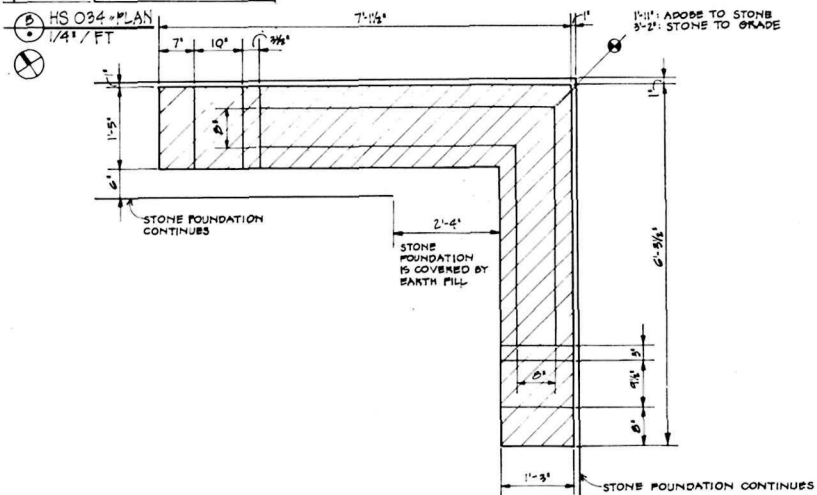
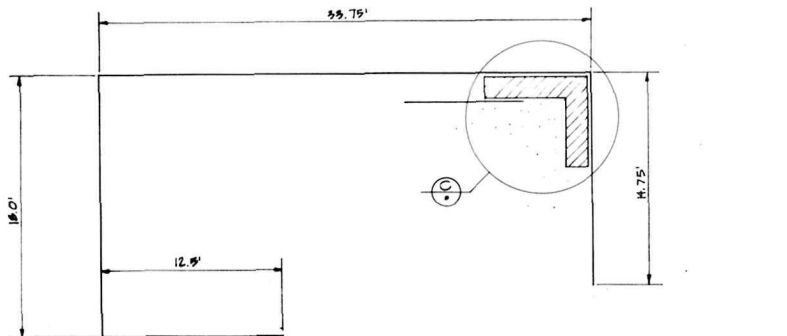
PREPARED
 DESIGNED
 DRAWN
 CHECKED
 DATE

424
 25,000
 10
 47

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE



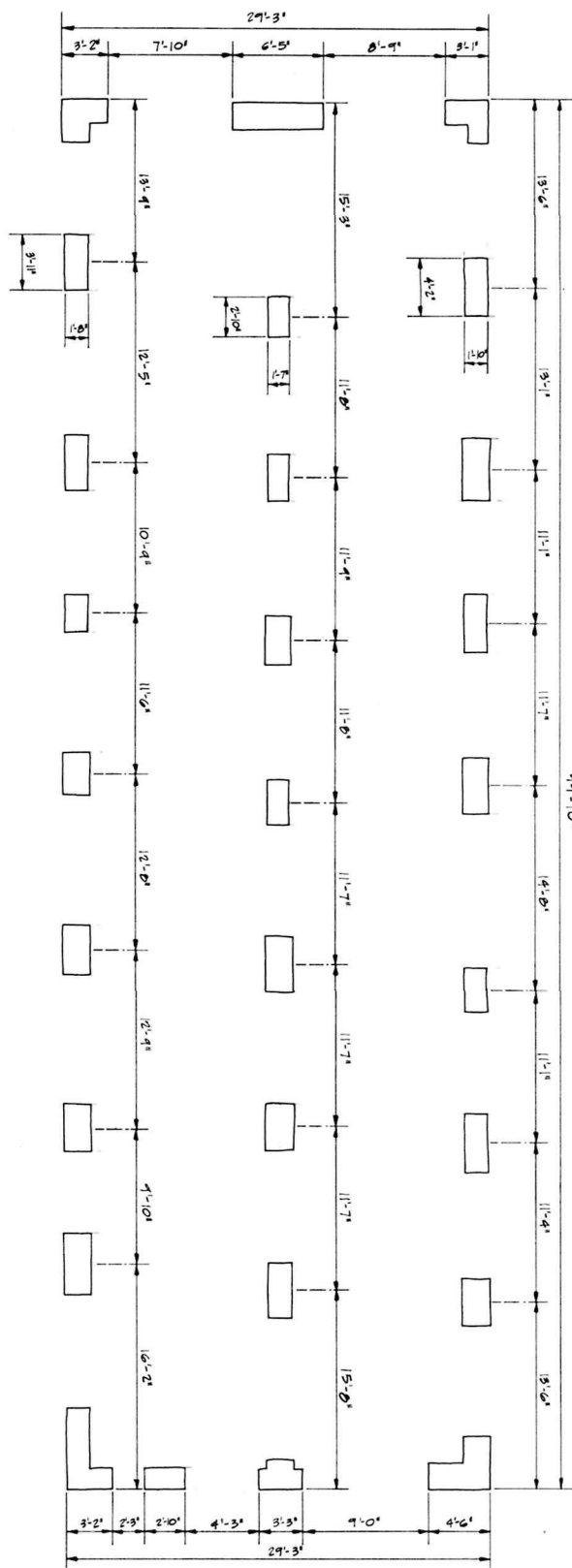
⊙ HS 020 • PLAN
1/4" = 1' FT
0 1 2 3 4 5 10 FEET.



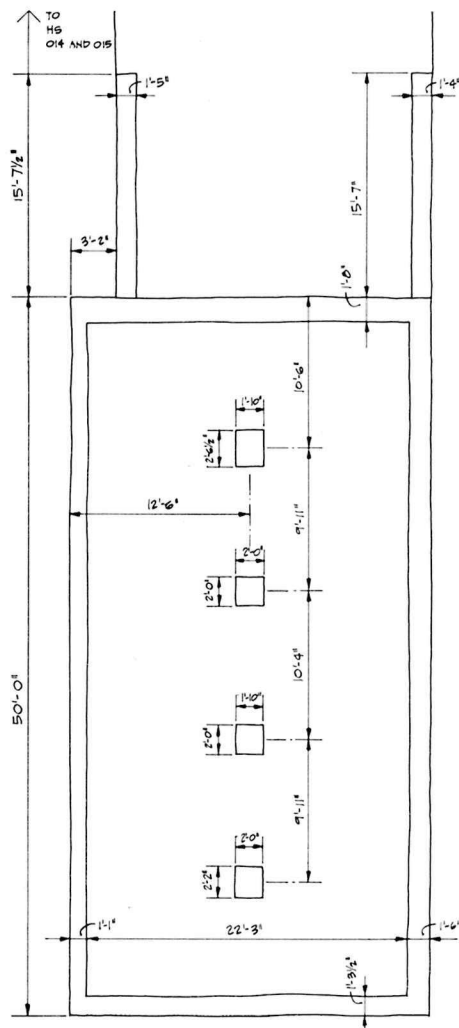
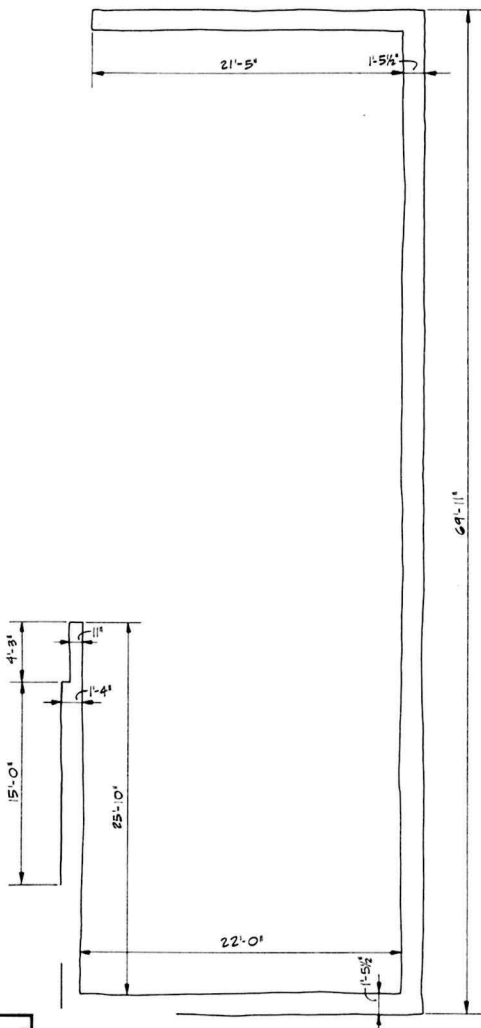
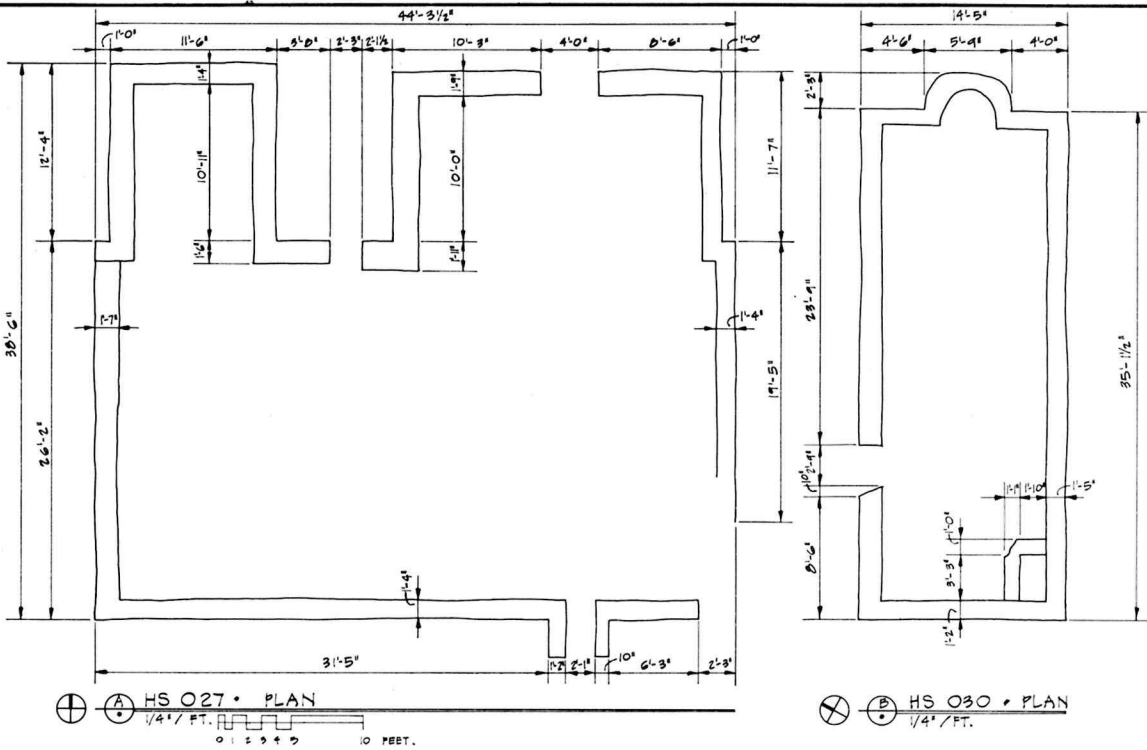
⊙ HS 034 • PLAN
1" = 1' FT
0 2' 4' 6' 8' 10' 12' 14' 16' 18' 20' 22' 24' 26' 28' 30' 32' 34' 36' 38' 40' 42' 44' 46' 48' 50' 52' 54' 56' 58' 60' 62' 64' 66' 68' 70' 72' 74' 76' 78' 80' 82' 84' 86' 88' 90' 92' 94' 96' 98' 100' FEET.

PREPARED BY
DESIGNED BY
DRAWN BY
CHECKED BY
APRIL 1978

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

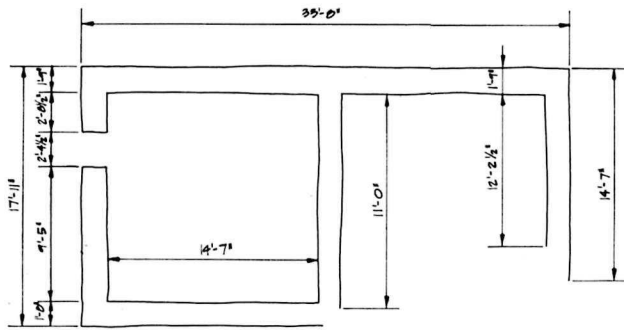


DESIGNED KOBINS DRAWN	PCIP PKG 02	25,000	424	DRAWING NO.
CHECKED				
DATE				



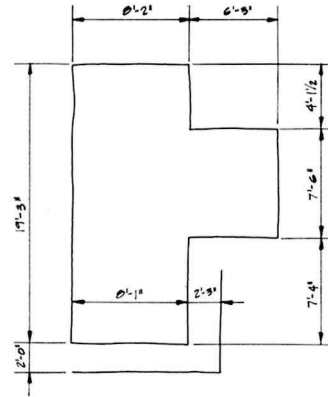
DATE	10-41
CHECKED	
DRAWN	
DESIGNED	
PROJECT NO.	424
SHEET	15,000
18	
6	

STABILIZATION OF ABOVE - GRADE STONE RUINS FORT BOWIE NATIONAL HISTORIC SITE

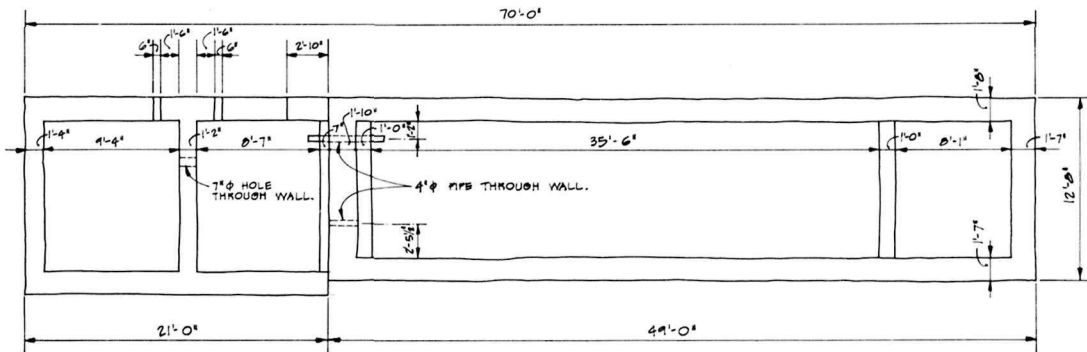


⊗
⊙ HS 034 • PLAN
1/4" / FT.

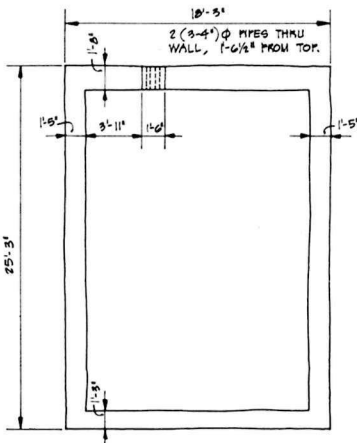
0 1 2 3 4 5 10 FBET.



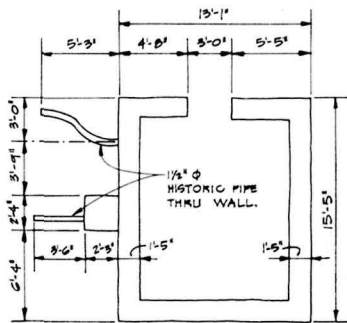
⊕
⊙ HS 042 • PLAN
1/4" / FT.



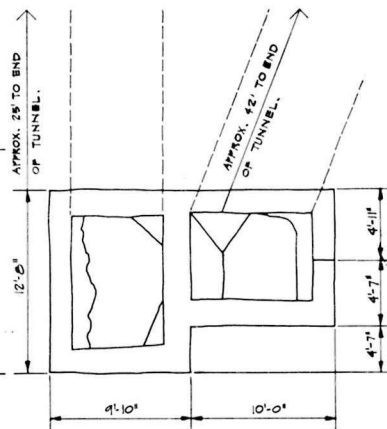
⊕
⊙ HS 069 • PLAN
1/4" / FT.



⊕
⊙ HS 068 • PLAN
1/4" / FT.



⊕
⊙ HS 070 • PLAN
1/4" / FT.



⊗
⊙ HS 071 • PLAN
1/4" / FT.

DATE	10-97
CHECKED	14
DESIGNED	25000
DRAWN	424
PREPARED	14
DRAWING NO.	424

STABILIZATION OF ABOVE-GRADE STONE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

STABILIZATION OF ABOVE - GRADE STONE RUINS
FORT BOWIE NATIONAL HISTORIC SITE



NON-HISTORIC SOIL CEMENT ADDED 1967 & REMOVED 1978 TO EXPOSE HISTORIC FABRIC.

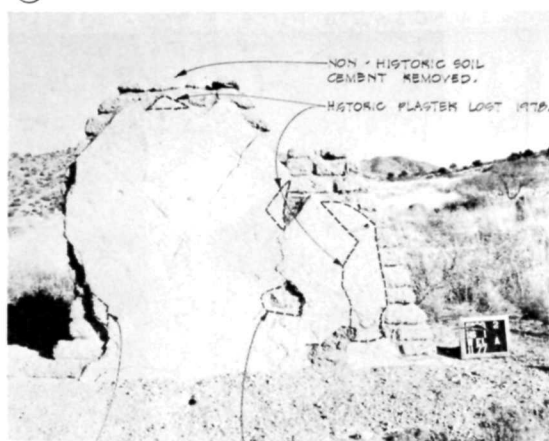
HISTORIC PLASTER RETAINED.

NON-HISTORIC SOIL CEMENT REMOVED.

APPROXIMATE EXTANT HISTORIC FABRIC.

SOIL CEMENT REMOVED & REPLACED WITH NEW UNAMENDED ADOBE.

(A) HS 001 • WALL A • NORTH ELEVATION



NON-HISTORIC SOIL CEMENT REMOVED.

HISTORIC PLASTER LOST 1978.

HISTORIC PLASTER LOST 1978

SOIL CEMENT RETAINED

(D) HS 001 • WALL A • WEST ELEVATION



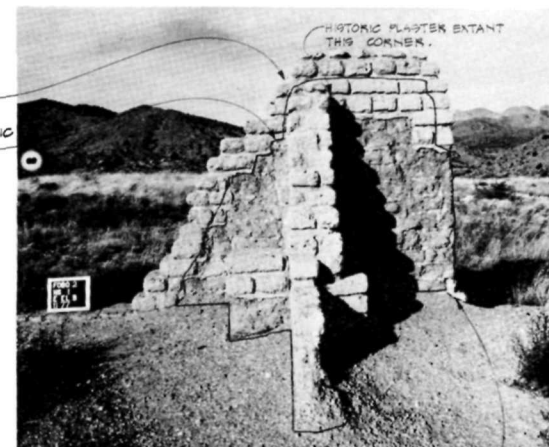
(B) HS 001 • WALL A • EAST ELEVATION



NON-HISTORIC SOIL CEMENT ADDED 1967 & REMOVED 1978 TO EXPOSE HISTORIC FABRIC.

(C) HS 001 • WALL A • SOUTH ELEVATION

NON-HISTORIC SOIL CEMENT REMOVED.
APPROXIMATE EXTANT HISTORIC FABRIC



HISTORIC PLASTER EXTANT THIS CORNER.

SOIL CEMENT REMOVED & REPLACED W/ NEW ADOBE.

(F) HS 001 • WALL B • EAST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

DESIGNED ROBBINS	PREPARED 424	DRAWING NO. 25,000
DRAWN	PKG LOS	SHEET 23
CHECKED APRIL 1978	DATE	OF 17

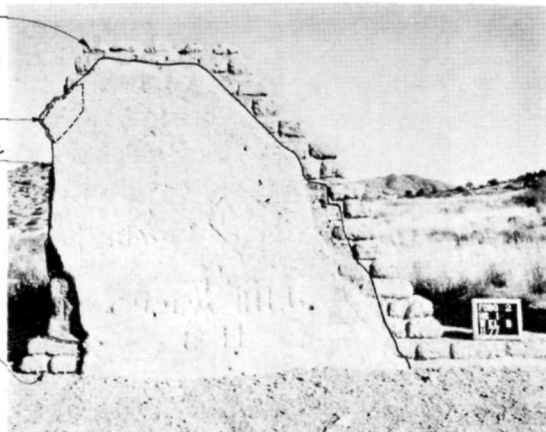


(A) HS 001 • WALL B • SOUTH ELEVATION

NON-HISTORIC SOIL CEMENT ADDED 1967 & REMOVED 1970 TO EXPOSE HISTORIC FABRIC.

HISTORIC PLASTER LOST 1970.
EXTANT HISTORIC FABRIC.

SOIL CEMENT REMOVED & REPLACED WITH NEW UNAMENDED ADOBE.



(B) HS 001 • WALL B • WEST ELEVATION



NON-HISTORIC SOIL CEMENT ADDED 1967 & REMOVED 1970 TO EXPOSE HISTORIC FABRIC.
HISTORIC PLASTER RETAINED.

(C) HS 001 • WALL C • NORTH ELEVATION



NON-HISTORIC SOIL CEMENT REMOVED.
APPROXIMATE EXTANT HISTORIC FABRIC.

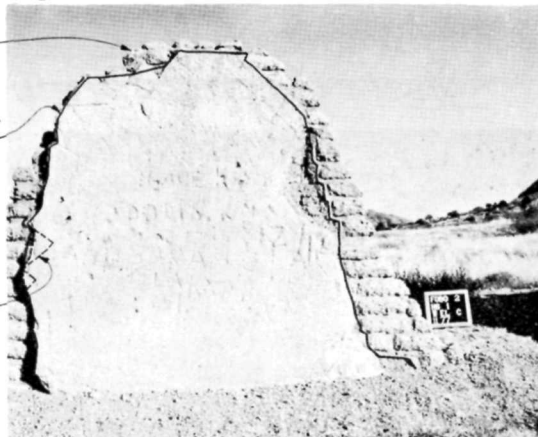
(D) HS 001 • WALL C • EAST ELEVATION



NON-HISTORIC SOIL CEMENT ADDED 1967 & REMOVED 1970 TO EXPOSE HISTORIC FABRIC.
APPROXIMATE EXTANT HISTORIC FABRIC.

HISTORIC PLASTER LOST 1970

(E) HS 001 • WALL C • SOUTH ELEVATION



(F) HS 001 • WALL C • WEST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

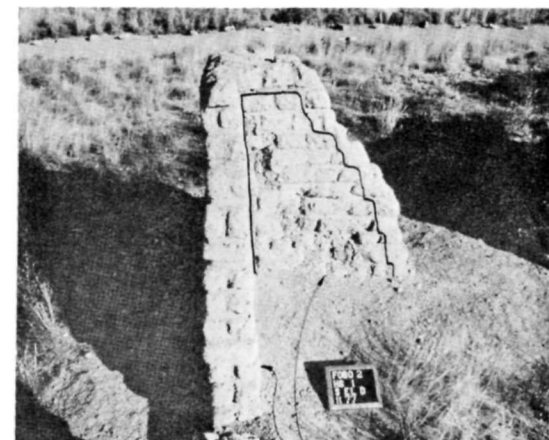
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
	108
CHECKED	SHEET
APRIL, 1978	24
DATE	OF 47



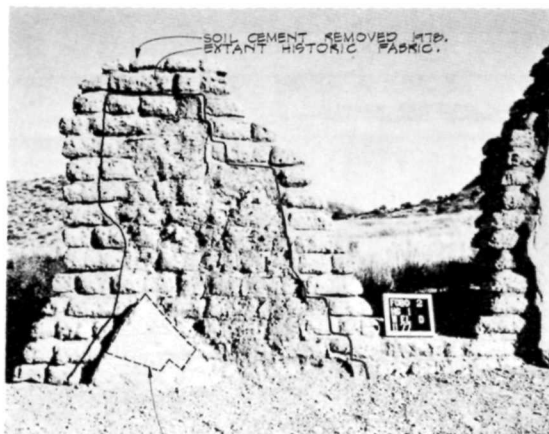
(A) HS 001 • WALL D • NORTH ELEVATION



(B) HS 001 • WALL D • EAST ELEVATION



(C) HS 001 • WALL D • SOUTH ELEVATION



HISTORIC PLASTER LOST 1978,

(D) HS 001 • WALL D • WEST ELEVATION



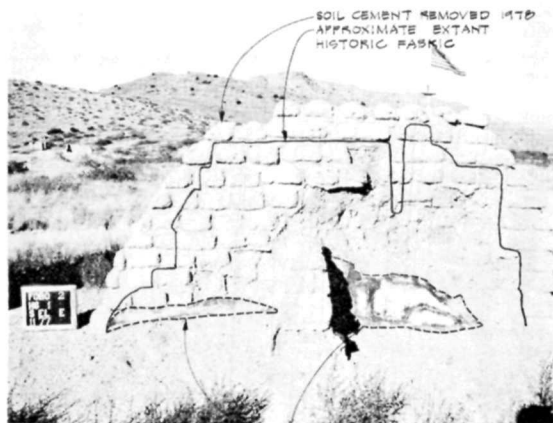
(E) HS 001 • WALL E • NORTH ELEVATION



(F) HS 001 • WALL E • EAST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PLOT
CHECKED	188
APRIL, 1978	SHEET
DATE	25
	OF 17



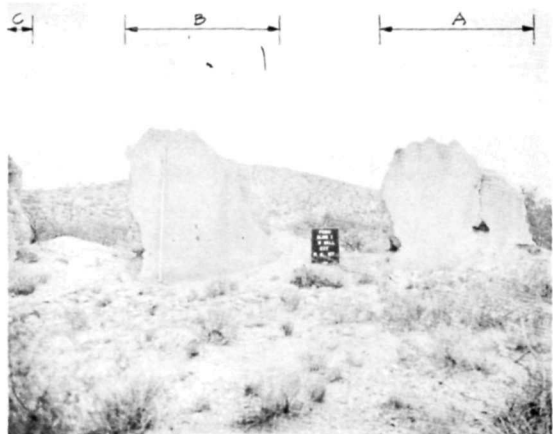
(A) HS 001 • WALL E • SOUTH ELEVATION



(B) HS 001 • WALL E • WEST ELEVATION



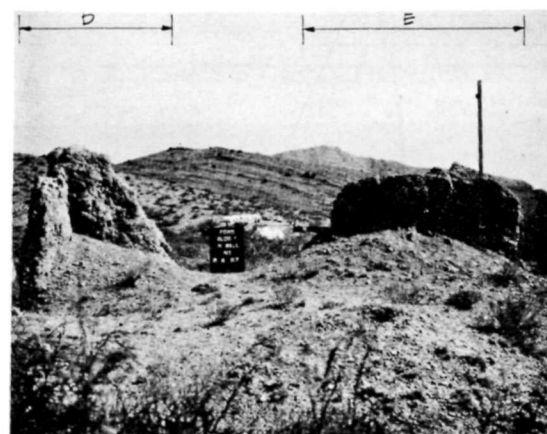
(C) HS 001 • WALLS D & C • WEST ELEVATION
BEFORE 1967 STABILIZATION.



(D) HS 001 • WALLS C, B & A • WEST ELEVATION
BEFORE 1967 STABILIZATION.



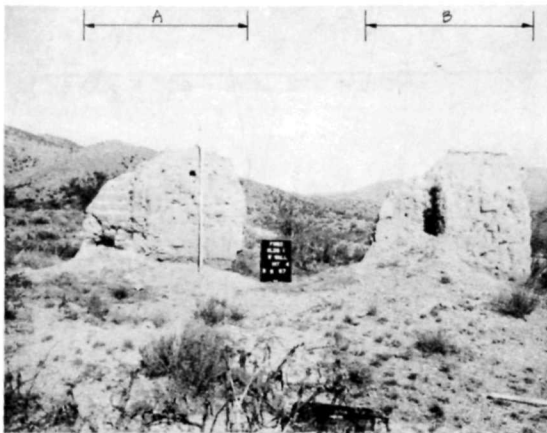
(E) HS 001 • WALLS E, B, C, & D • NORTH ELEVATION
BEFORE 1967 STABILIZATION.



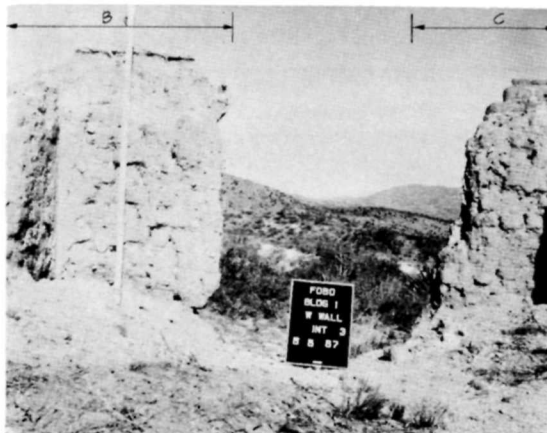
(F) HS 001 • WALLS D & E • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

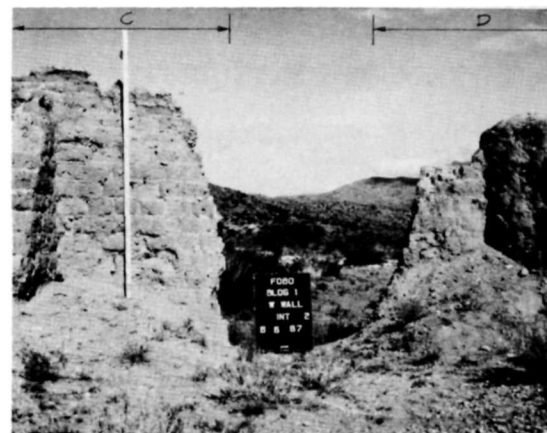
DESIGNED ROBBINS	DRAWN 100	CHECKED APRIL, 1978	DATE
DRAWING NO. 424		SHEET 26	
25,000		17	



Ⓐ HS 001 • WALLS A & B • EAST ELEVATION
BEFORE 1967 STABILIZATION.



Ⓑ HS 001 • WALLS B & C • EAST ELEVATION
BEFORE 1967 STABILIZATION.



Ⓒ HS 001 • WALLS C & D • EAST ELEVATION
BEFORE 1967 STABILIZATION.



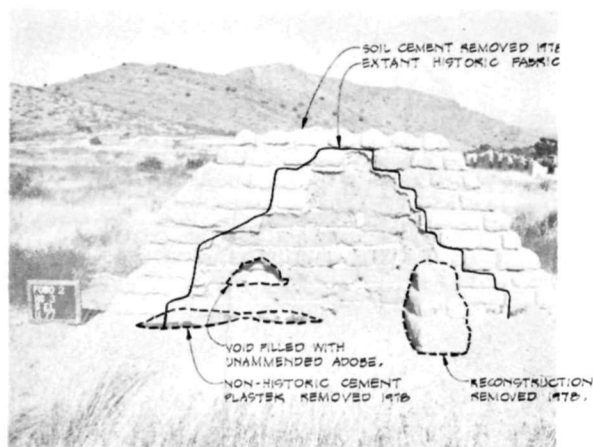
Ⓔ HS 003 • NORTH ELEVATION



Ⓕ HS 003 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	28,000
DRAWN	SHEET
CHECKED	27
APRIL, 1978	OF 17
DATE	



Ⓐ HS 003 • SOUTH ELEVATION



Ⓑ HS 003 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION



Ⓓ HS 004 & 005 • EAST ELEVATION



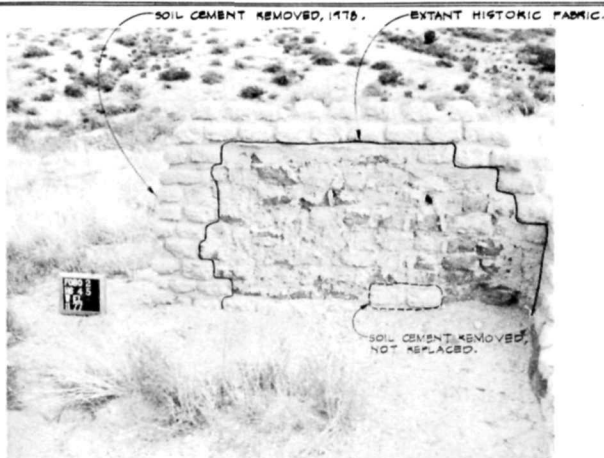
Ⓔ HS 004 & 005 • EAST ELEVATION



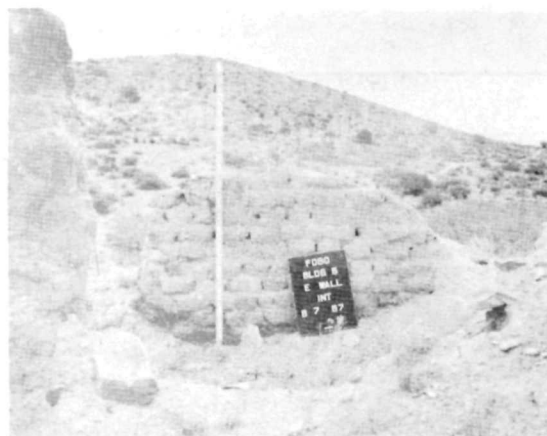
Ⓕ HS 004 & 005 • EAST ELEVATION
BEFORE 1967 STABILIZATION.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

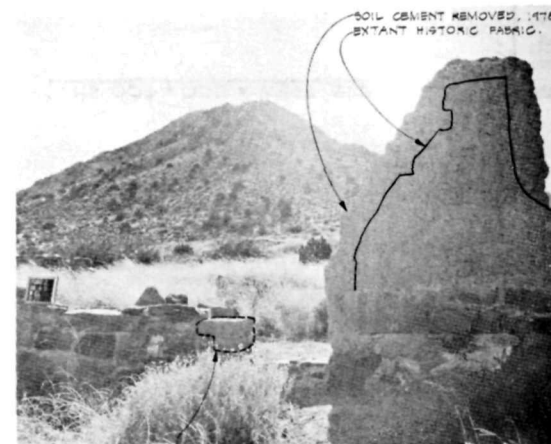
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	POB
CHECKED	103
APRIL 1978	SHEET
DATE	28
	17



Ⓐ HS 004 ♦ 005 • WEST ELEVATION



Ⓑ HS 004 ♦ 005 • WEST ELEVATION
BEFORE 1967 STABILIZATION.



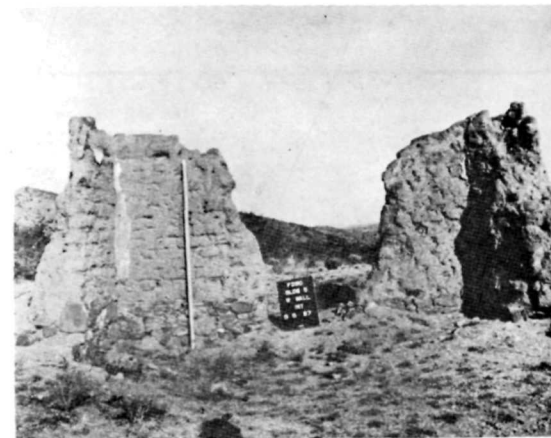
Ⓒ HS 004 ♦ 005 • NORTH ELEVATION



Ⓓ HS 004 ♦ 005 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME WALL AS Ⓒ.



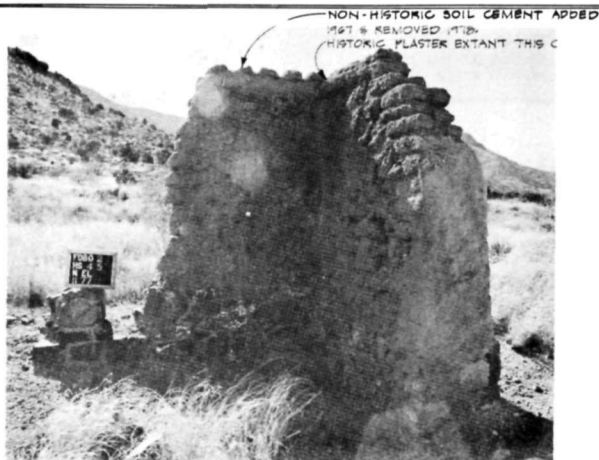
Ⓔ HS 004 ♦ 005 • EAST ELEVATION



Ⓕ HS 004 ♦ 005 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓔ.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	21
CHECKED	21
APRIL, 1978	9-47
DATE	



Ⓐ HS 004 & 005 • NORTH ELEVATION



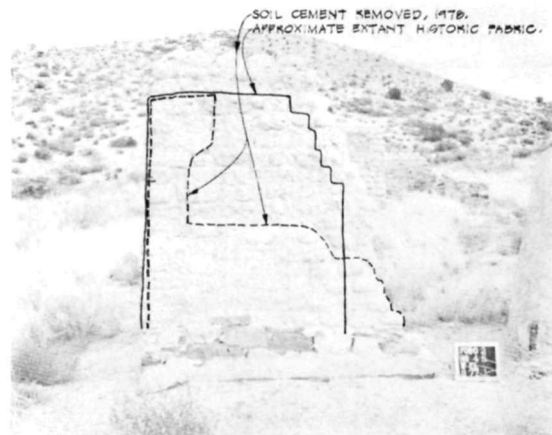
Ⓑ HS 004 & 005 • NORTH ELEVATION BEFORE 1967 STABILIZATION. SAME VIEW AS Ⓐ.



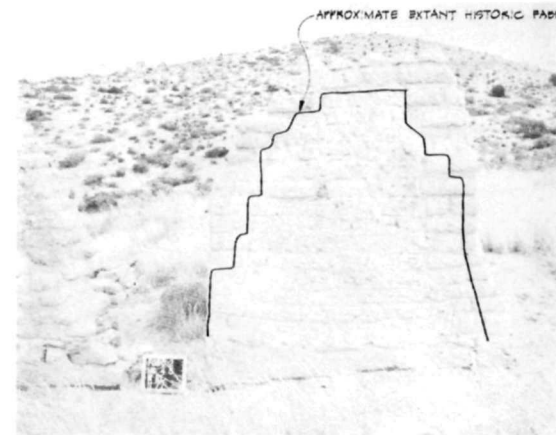
Ⓒ HS 004 & 005 • WEST ELEVATION



Ⓓ HS 004 & 005 • WEST ELEVATION BEFORE 1967 STABILIZATION. SAME VIEW AS Ⓒ.



Ⓔ HS 004 & 005 • WEST ELEVATION



Ⓕ HS 004 & 005 • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	DATE
APRIL, 1978	



Ⓐ HS 004 & 005 • WEST ELEVATION
BEFORE 1967 STABILIZATION.

SAME VIEW AS Ⓔ & Ⓕ.



Ⓑ HS 004 & 005 • SOUTH ELEVATION

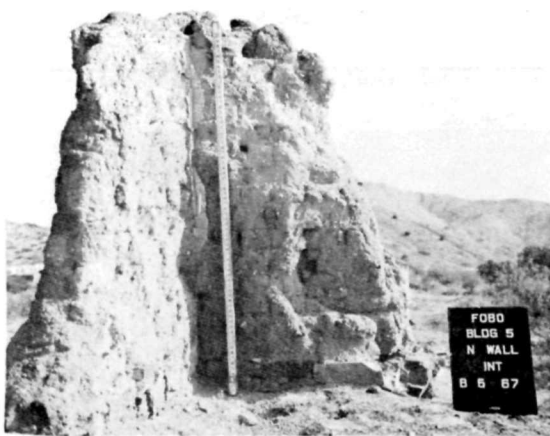


Ⓒ HS 004 & 005 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.

SAME VIEW AS Ⓔ.



Ⓓ HS 004 & 005 • SOUTH ELEVATION



Ⓔ HS 004 & 005 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION

SAME VIEW AS Ⓓ.



Ⓕ HS 004 & 005 • SOUTH ELEVATION

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	103
APRIL, 1978	SHEET
DATE	31
	OF 17

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE



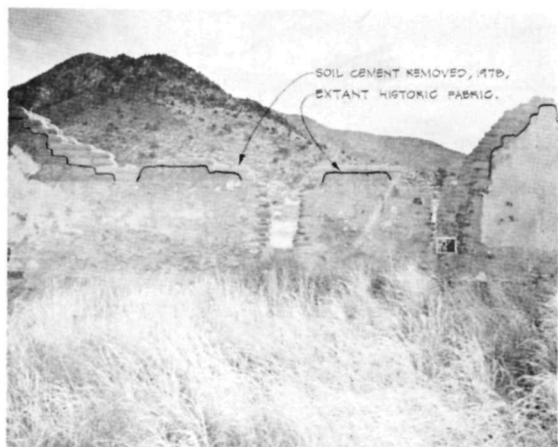
Ⓐ HS 004 & 005 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓕ.



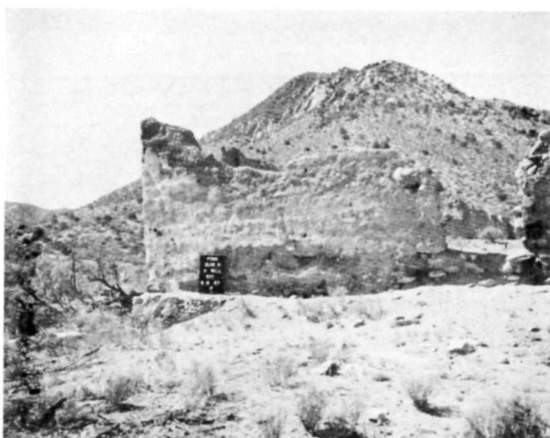
Ⓑ HS 004 & 005 • NORTH ELEVATION



Ⓒ HS 004 & 005 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ.



Ⓓ HS 008 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓔ & Ⓕ.



Ⓔ HS 008 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.



Ⓕ HS 008 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	SHEET
APRIL 1978	32
DATE	OF 17



Ⓐ HS 008 • NORTH ELEVATION



Ⓑ HS 008 • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ



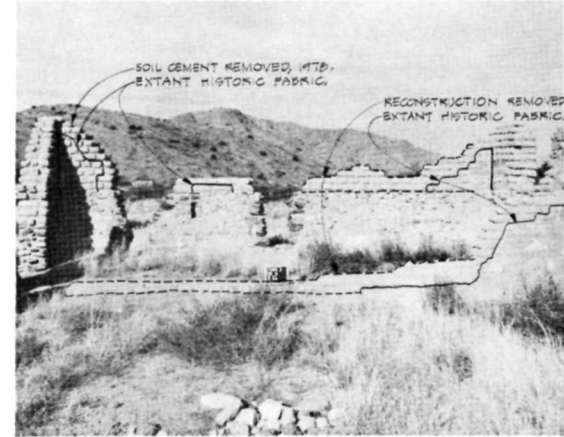
Ⓒ HS 008 • SOUTH ELEVATION



Ⓓ HS 008 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS Ⓒ



Ⓔ HS 008 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,



Ⓕ HS 008 • SOUTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

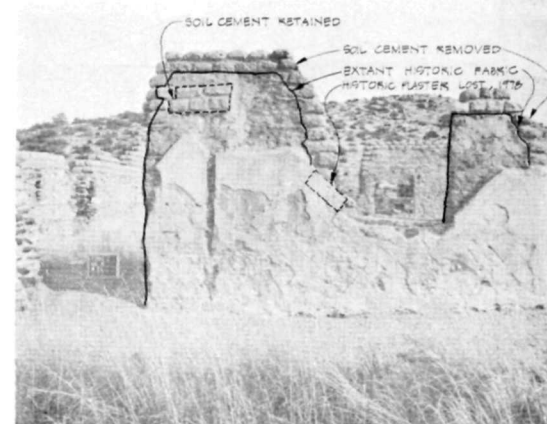
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	33
APRIL, 1978	OF 17
DATE	



(A) HS 008 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (B).



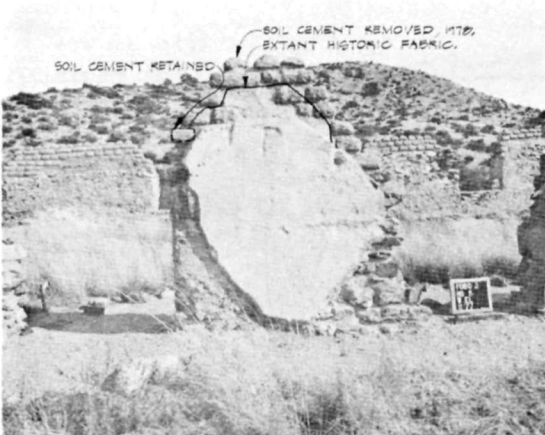
(B) HS 008 • WEST ELEVATION



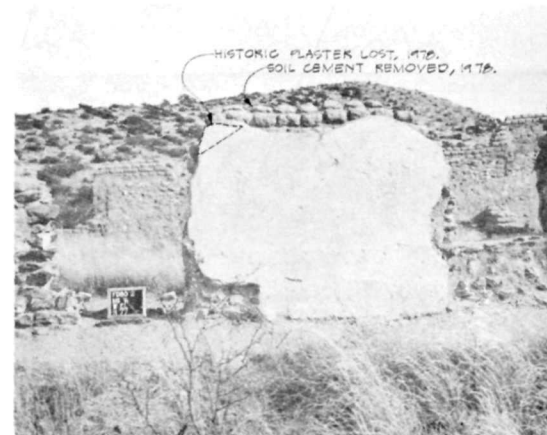
(C) HS 008 • WEST ELEVATION



(D) HS 008 • WEST ELEVATION



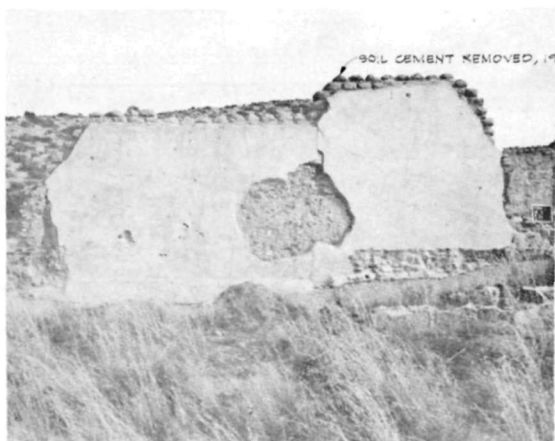
(E) HS 008 • WEST ELEVATION



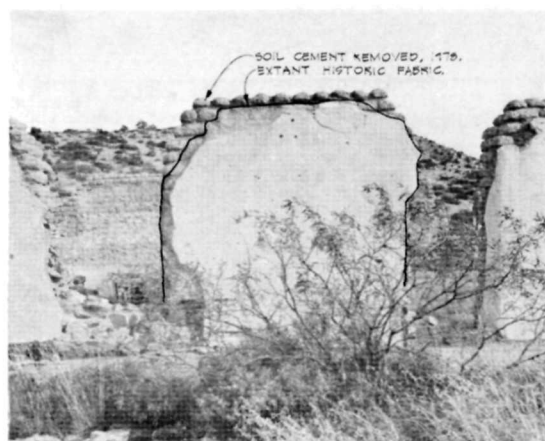
(F) HS 008 • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

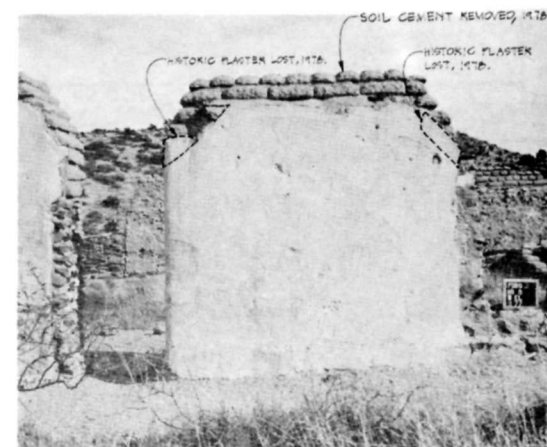
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	108
APRIL, 1978	34
DATE	OF 47



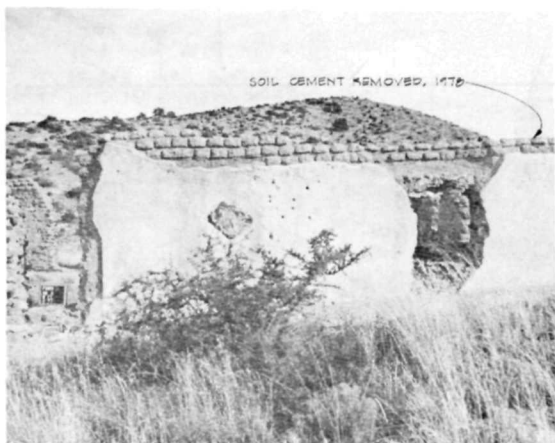
A HS 00B • WEST ELEVATION



B HS 00B • WEST ELEVATION



C HS 00B • WEST ELEVATION



D HS 00B • WEST ELEVATION



E HS 00B • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS **D**, **C** & **A**.



F HS 00B • WEST ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS **E**, **D** & **A**.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

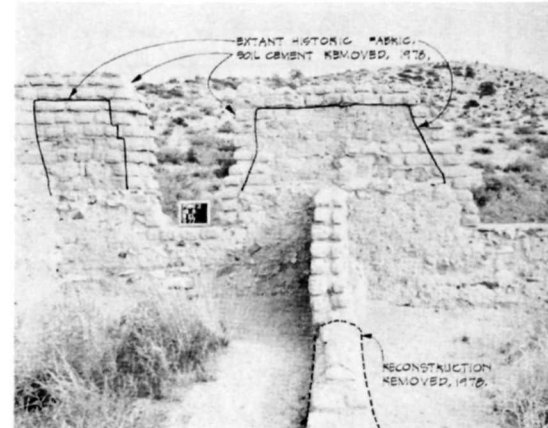
PREPARED	DRAWING NO.
DESIGNED ROBBINS DRAWN	424 25,000
CHECKED	SHEET
APRIL, 1978	35
DATE	OF 17



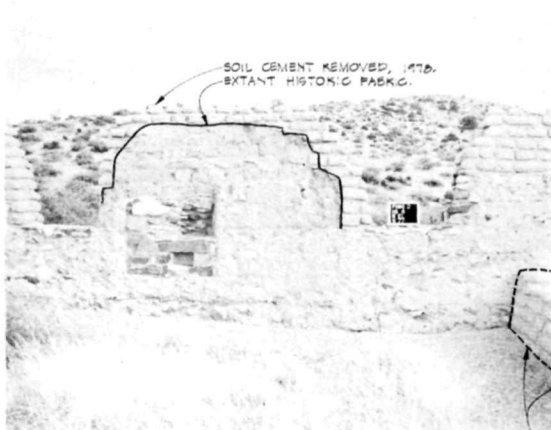
(A) HS 008 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (A) (B) (C) (D)



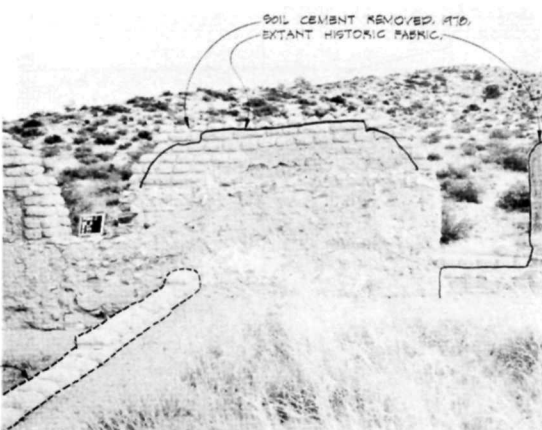
(B) HS 008 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (C) (D) (E) (F)



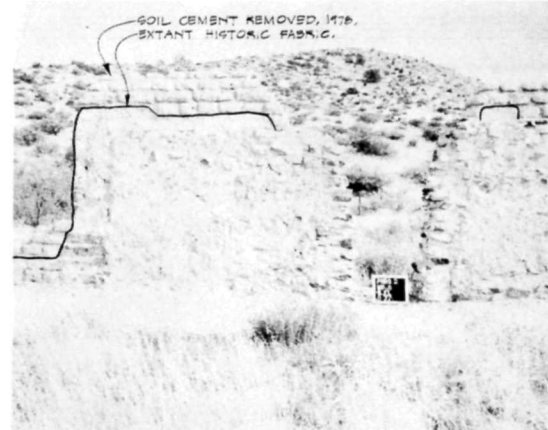
(C) HS 008 • WEST ELEVATION



(D) HS 008 • WEST ELEVATION



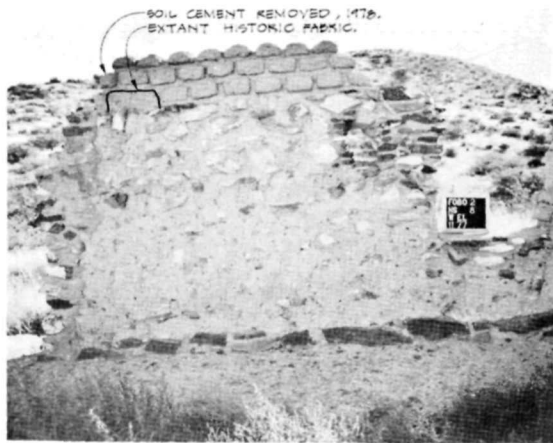
(E) HS 008 • WEST ELEVATION



(F) HS 008 • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
PHS	36
101	OF 47
CHECKED	
APRIL 1978	
DATE	



Ⓐ HS 008 • WEST ELEVATION



Ⓑ HS 008 • WEST ELEVATION



Ⓒ HS 008 • WEST ELEVATION



Ⓓ HS 008 • WEST ELEVATION



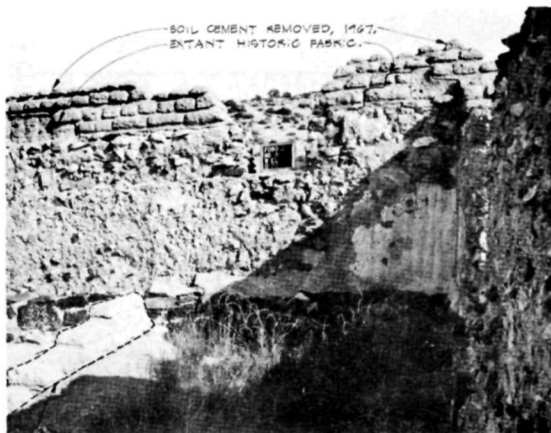
Ⓔ HS 008 • WEST ELEVATION



Ⓕ HS 008 • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

DESIGNED ROBBINS	DRAWING NO. 424
DRAWN	25,000
CHECKED APRIL 1978	SHEET 37
DATE	OF 47



(A) HS 000 • WEST ELEVATION



(B) HS 000 • WEST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (C) 36



(C) HS 000 • WEST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (D) 36



(D) HS 000 • WEST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (E) 36 & (F) 36



(E) HS 000 • WEST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (A) 37 & (B) 37



(F) HS 000 • WEST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (C) 37 & (D) 37

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

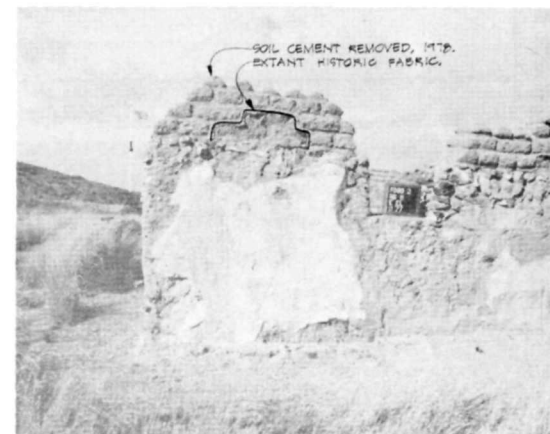
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	30
APRIL 1978	OF 17
DATE	



Ⓐ HS 008 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ & Ⓔ.



Ⓑ HS 008 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ & Ⓔ.



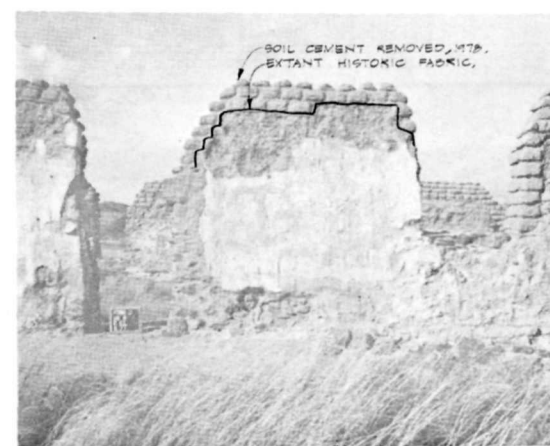
Ⓒ HS 008 • EAST ELEVATION



Ⓓ HS 008 • EAST ELEVATION



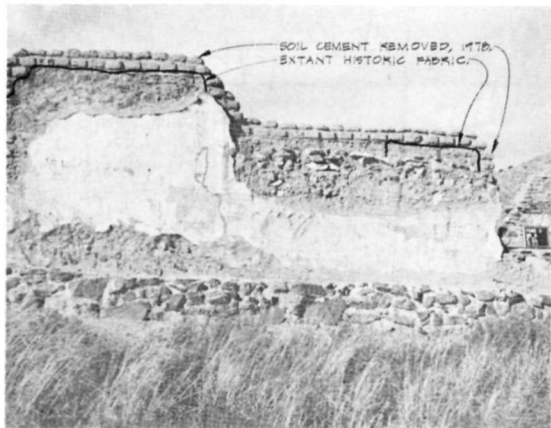
Ⓔ HS 008 • EAST ELEVATION



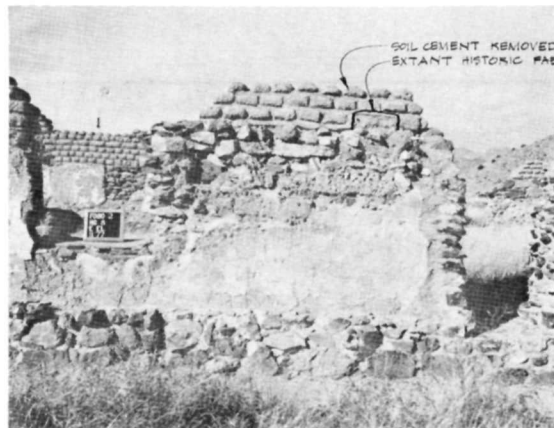
Ⓕ HS 008 • EAST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	
APRIL, 1978	
DATE	



Ⓐ HS 008 • EAST ELEVATION



Ⓑ HS 008 • EAST ELEVATION



Ⓒ HS 008 • EAST ELEVATION



Ⓓ HS 008 • EAST ELEVATION



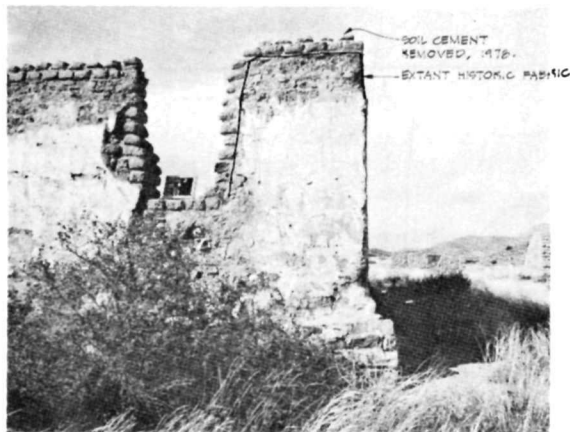
Ⓔ HS 008 • EAST ELEVATION



Ⓕ HS 008 • EAST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	PKG
APRIL, 1978	198
DATE	SHEET
	40
	OF 17



Ⓐ HS 008 • EAST ELEVATION



Ⓑ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ Ⓓ Ⓔ



Ⓒ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓔ Ⓕ



Ⓓ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ



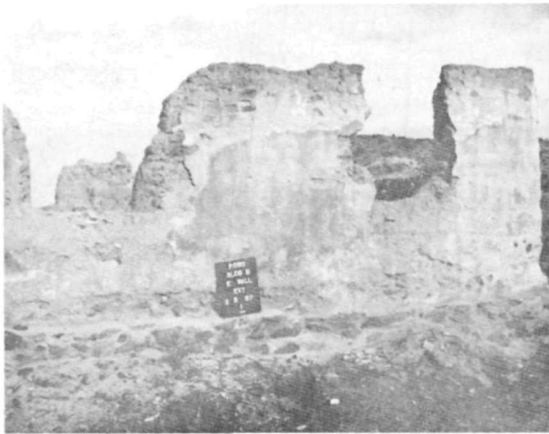
Ⓔ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ Ⓕ



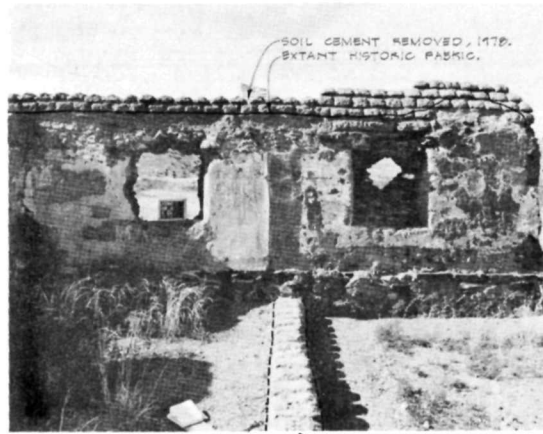
Ⓕ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ Ⓔ

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

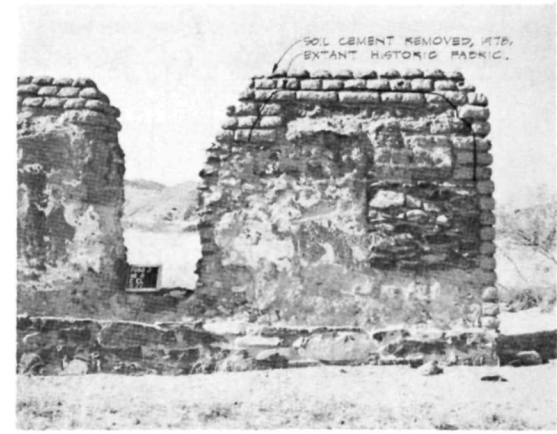
DESIGNED ROBBINS	DRAWING NO. 424
DRAWN PIS	25,000
CHECKED APRIL 1978	SHEET 41
DATE	OF 47



Ⓐ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS Ⓐ.



Ⓑ HS 008 • EAST ELEVATION



Ⓒ HS 008 • EAST ELEVATION



Ⓓ HS 008 • EAST ELEVATION



Ⓔ HS 008 • EAST ELEVATION



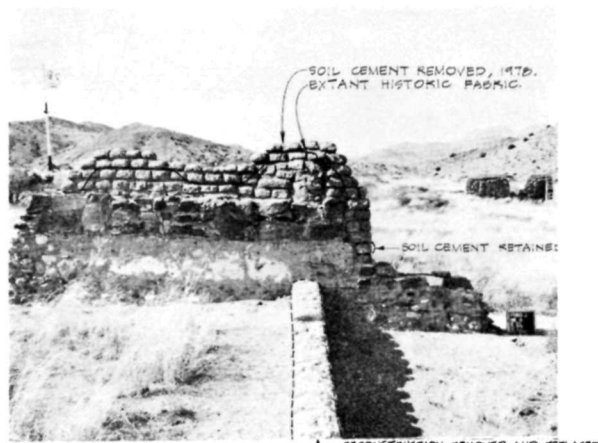
Ⓕ HS 008 • EAST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

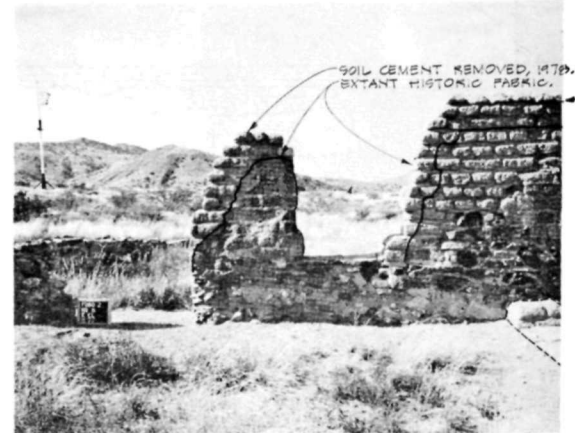
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PAGE
103	SHEET
CHECKED	42
APRIL, 1978	OF 47
DATE	



Ⓐ HS 008 • EAST ELEVATION



Ⓑ HS 008 • EAST ELEVATION



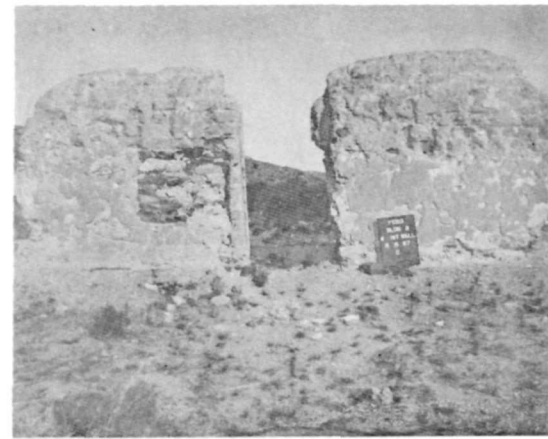
Ⓒ HS 008 • EAST ELEVATION



Ⓓ HS 008 • EAST ELEVATION



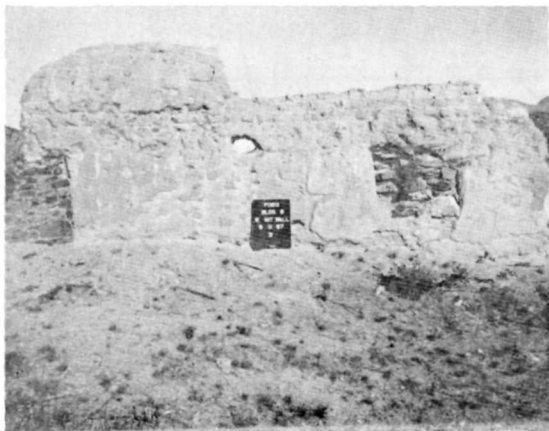
Ⓔ HS 008 • EAST ELEVATION
BEFORE 1971 STABILIZATION.
SAME VIEW AS Ⓓ.



Ⓕ HS 008 • EAST ELEVATION
BEFORE 1971 STABILIZATION.
SAME VIEW AS Ⓒ & Ⓓ.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	SHEET
APRIL, 1978	43
DATE	0-17



Ⓐ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓔ.



Ⓑ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓕ & Ⓖ.



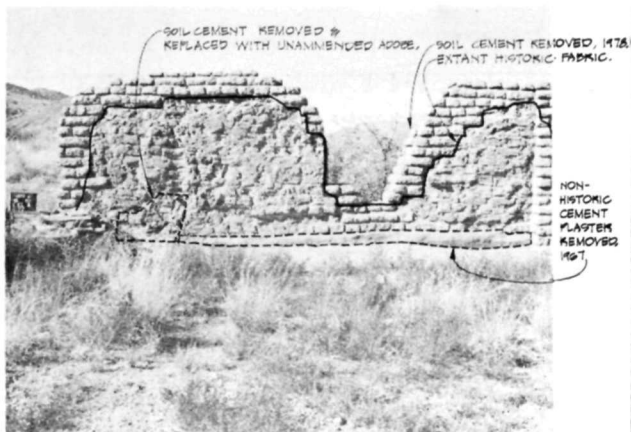
Ⓒ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓕ.



Ⓓ HS 008 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ & Ⓖ.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PGP
CHECKED	103
APRIL, 1978	44
DATE	OF 47



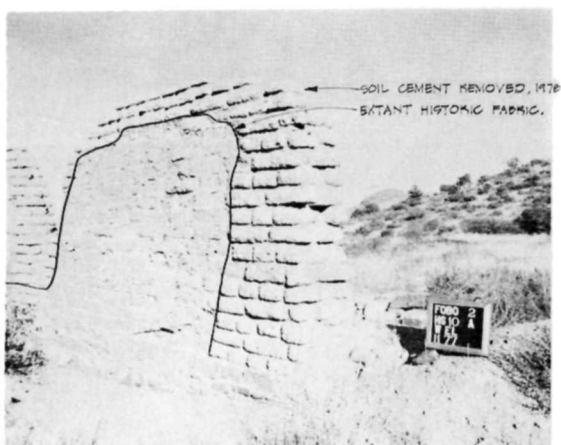
Ⓐ HS 010 • WALL A • EAST ELEVATION



Ⓑ HS 010 • WALL A • EAST ELEVATION BEFORE 1967 STABILIZATION. SAME VIEW AS Ⓐ



Ⓒ HS 010 • WALL A • WEST ELEVATION



Ⓓ HS 010 • WALL A • WEST ELEVATION



Ⓔ HS 010 • WALL A • WEST ELEVATION BEFORE 1967 STABILIZATION. SAME VIEW AS Ⓒ & Ⓓ



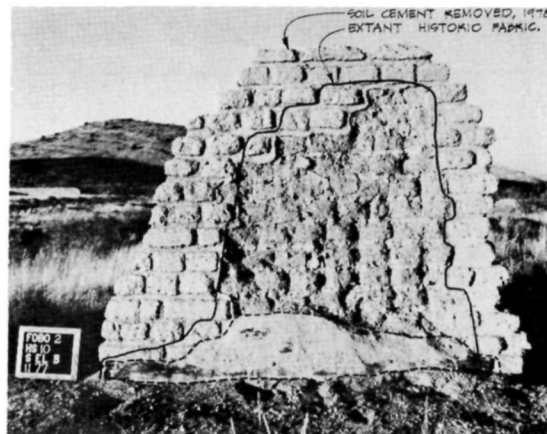
Ⓕ HS 010 • WALL B • NORTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

DESIGNED ROBBINS	DRAWING NO. 424
DRAWN 108	25,000
CHECKED APRIL, 1978	SHEET 45
DATE	of 17



(A) HS 010 • WALL B • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (B)



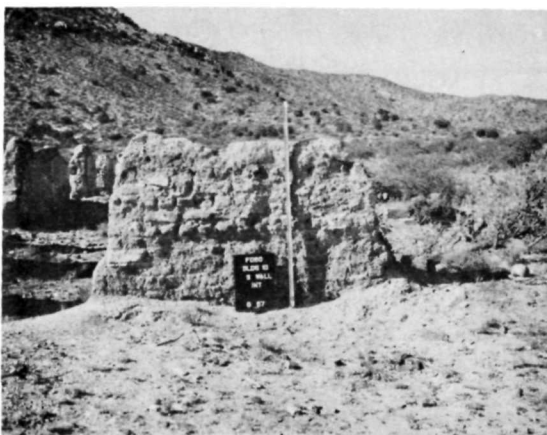
(B) HS 010 • WALL B • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (A)



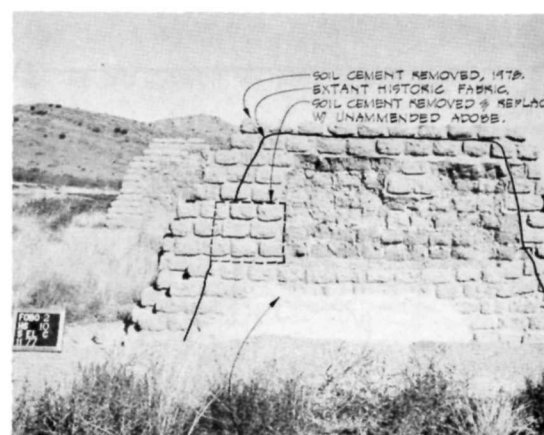
(C) HS 010 • WALL B • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (B)



(D) HS 010 • WALL C • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (E)



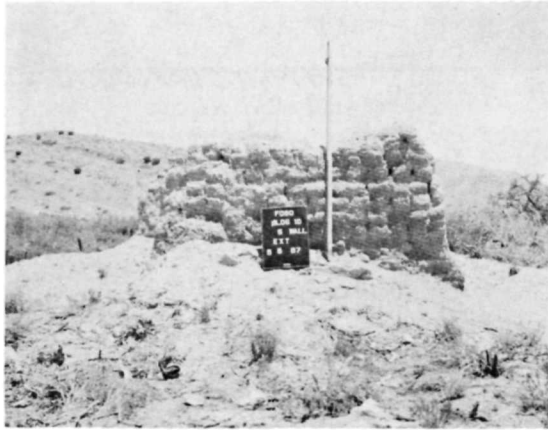
(E) HS 010 • WALL C • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (D)



(F) HS 010 • WALL C • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (E)

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

DESIGNED ROBBINS	DRAWN 198	CHECKED APRIL, 1978	DATE
DRAWING NO. 424		SHEET 46	



Ⓐ HS 010 • WALL C • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ



Ⓓ HS 011 • EAST ELEVATION



Ⓒ HS 011 • WEST ELEVATION



Ⓓ HS 011 • EAST ELEVATION
BEFORE 1967 STABILIZATION



Ⓒ HS 011 • WEST ELEVATION
AFTER 1967 STABILIZATION (ADOBES PORTION UNTOUCHED.)

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DESIGNED	DRAWING NO.
ROBBINS	ROBBINS	424
DRAWN	DATE	25.000
CHECKED	DATE	181
APRIL 1978	DATE	47
		OF 17



Ⓐ HS 012 • NORTH ELEVATION

HISTORIC FABRIC UNTOUCHED 1967-1970,
EXCEPT SOME CHEMICAL STABILIZATION.



Ⓑ HS 012 • EAST ELEVATION



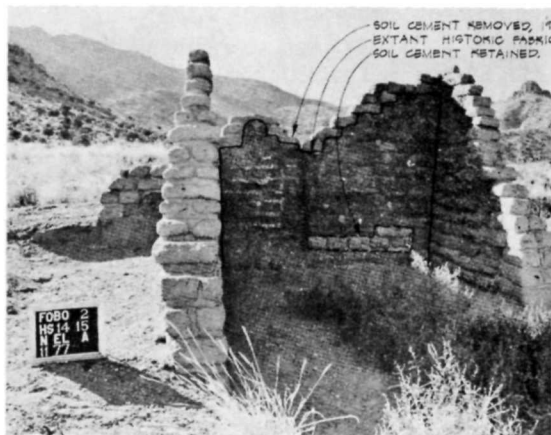
Ⓒ HS 012 • SOUTH ELEVATION



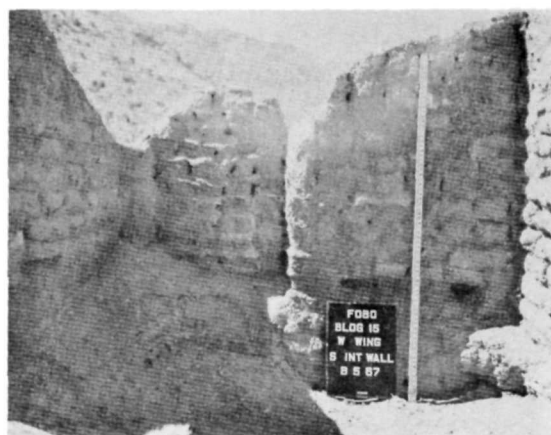
Ⓓ HS 012 • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	SHEET
APRIL, 1978	40
DATE	OF 17



Ⓐ HS 014 & 015 • WALL A • NORTH ELEVATION



Ⓑ HS 014 & 015 • WALL A • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.

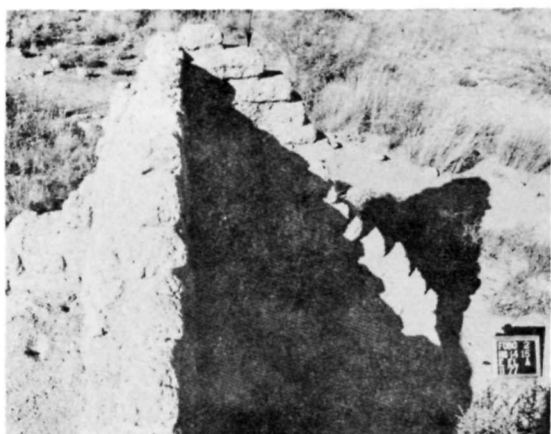
NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE HISTORIC
FABRIC BENEATH.



Ⓒ HS 014 & 015 • WALL A • EAST ELEVATION



Ⓓ HS 014 & 015 • WALL A • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ.



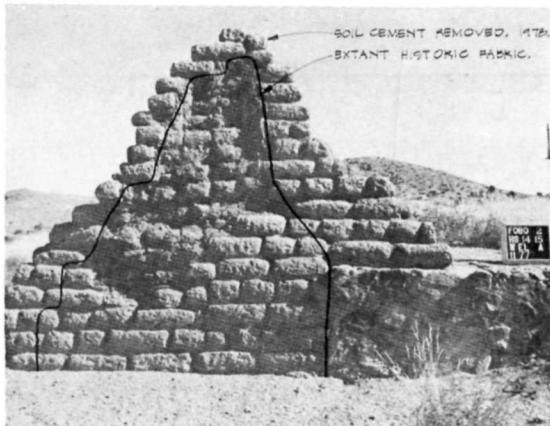
Ⓔ HS 014 & 015 • WALL A • EAST ELEVATION



Ⓕ HS 014 & 015 • WALL A • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ & Ⓑ.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCP
CHECKED	183
APRIL 1978	SHEET
DATE	49
	17



(A) HS 014 & 015 • WALL A • WEST ELEVATION



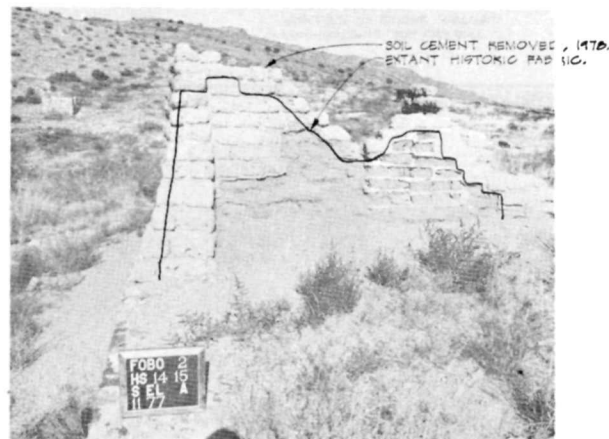
(B) HS 014 & 015 • WALL A • WEST ELEVATION
BEFORE 1971 STABILIZATION.
SAME VIEW AS (A)



(C) HS 014 & 015 • WALL A • WEST ELEVATION



(D) HS 014 & 015 • WALL A • WEST ELEVATION
BEFORE 1971 STABILIZATION.
SAME VIEW AS (C)



(E) HS 014 & 015 • WALL A • SOUTH ELEVATION



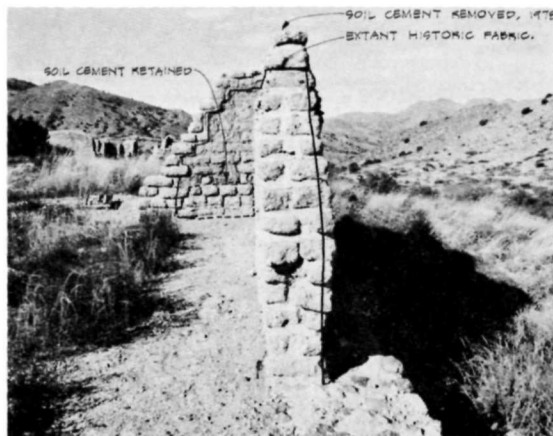
(F) HS 014 & 015 • WALL B • NORTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PKG
CHECKED	103
APRIL, 1978	SHEET
DATE	50
	OF 47



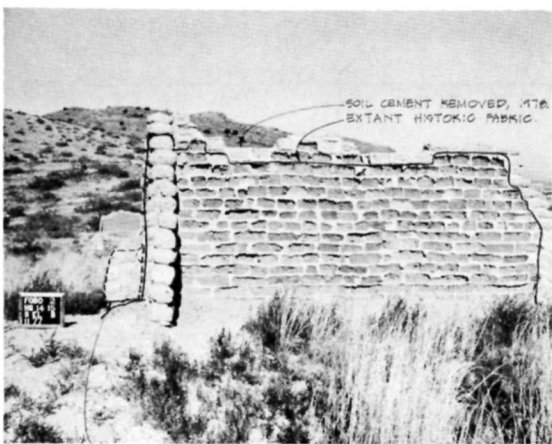
(A) HS 014 & 015 • WALL B • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (B).



(B) HS 014 & 015 • WALL B • EAST ELEVATION



(C) HS 014 & 015 • WALL B • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (D).



(D) HS 014 & 015 • WALL B • SOUTH ELEVATION



(E) HS 014 & 015 • WALL B • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (F).



(F) HS 014 & 015 • WALL B • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

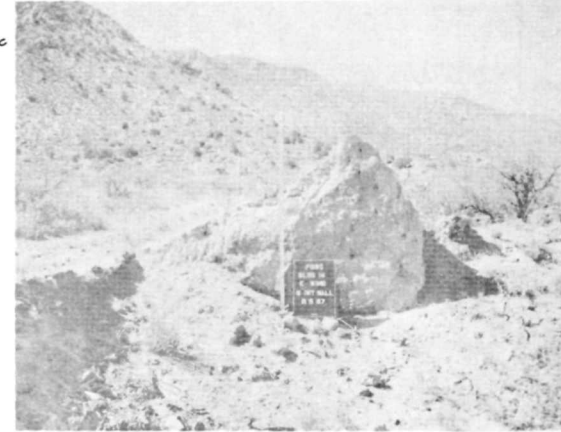
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	23,000
DRAWN	
CHECKED	SHEET
APRIL 1978	51
DATE	OF 17



(A) HS 014 * 015 * WALL B * WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (P 51).



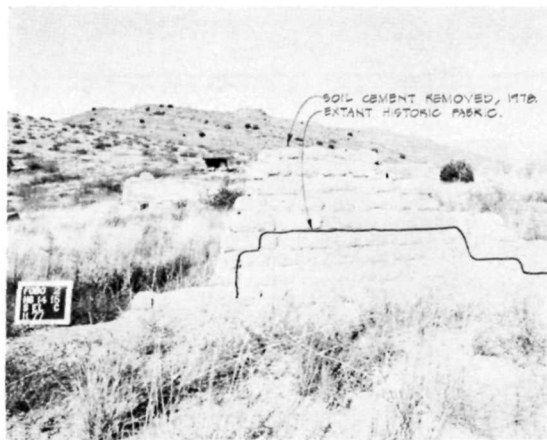
(B) HS 014 * 015 * WALL C * NORTH ELEVATION



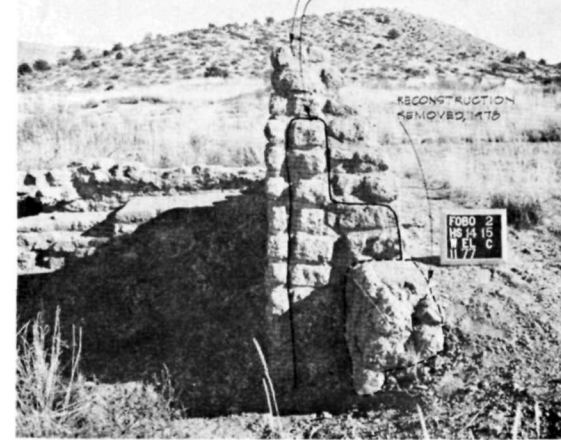
(C) HS 014 * 015 * WALL C * NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (B).



(D) HS 014 * 015 * WALL C * EAST ELEVATION



(E) HS 014 * 015 * WALL C * SOUTH ELEVATION



(F) HS 014 * 015 * WALL C * WEST ELEVATION

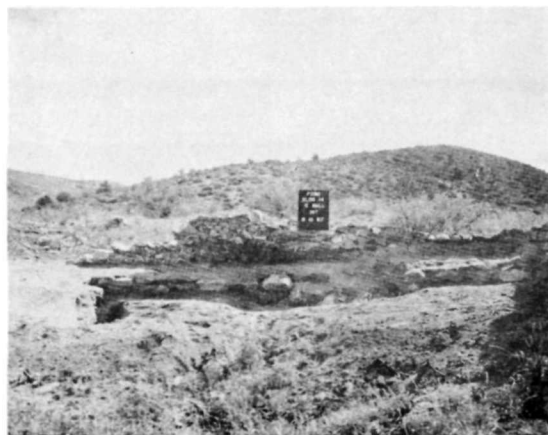
STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCP
CHECKED	108
APRIL, 1978	SHEET
DATE	52
	OF 17



RECONSTRUCTION REMOVED, 1978.

Ⓐ HS 014 & 015 • WALL C • WEST ELEVATION



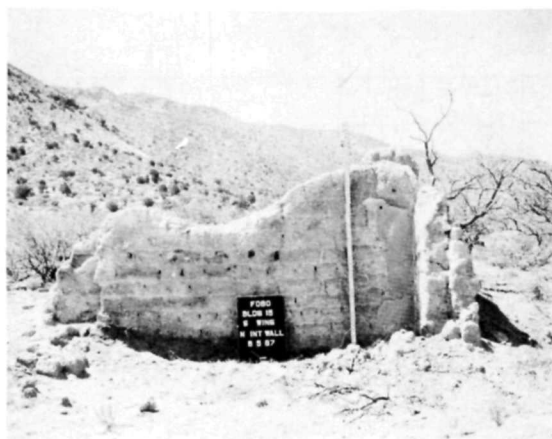
Ⓑ HS 014 & 015 • WALL C • WEST ELEVATION
BEFORE 1967 STABILIZATION.

SAME VIEW AS Ⓐ



SOIL CEMENT RETAINED.

Ⓒ HS 014 & 015 • WALL D • NORTH ELEVATION



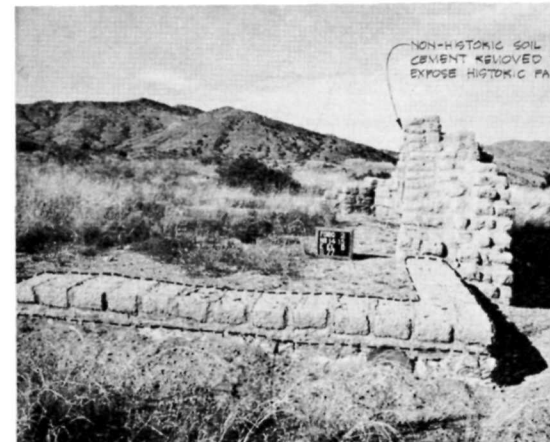
Ⓓ HS 014 & 015 • WALL D • NORTH ELEVATION
BEFORE 1967 STABILIZATION.

SAME VIEW AS Ⓒ



RECONSTRUCTION REMOVED, 1978.

Ⓔ HS 014 & 015 • WALL D • NORTH ELEVATION



NON-HISTORIC SOIL CEMENT REMOVED TO EXPOSE HISTORIC MASONRY.

RECONSTRUCTION REMOVED, 1978.

Ⓕ HS 014 & 015 • WALL D • EAST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

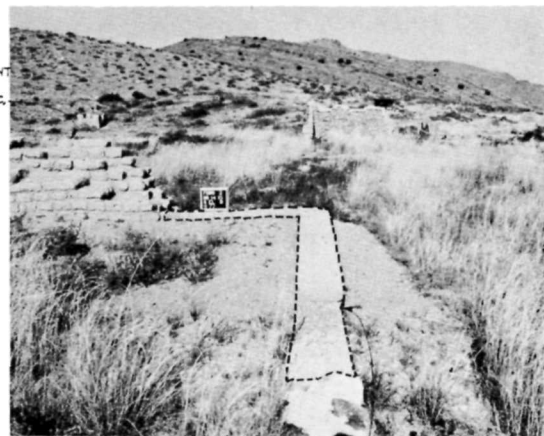
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
FOR	
LOC.	
CHECKED	
APRIL, 1978	
DATE	



NON-HISTORIC SOIL CEMENT
REMOVED IN 1970 TO
EXPOSE HISTORIC FABRIC.

RECONSTRUCTION REMOVED, 1970.

(A) HS 014 & 015 • WALL D • SOUTH ELEVATION



RECONSTRUCTION REMOVED, 1970.

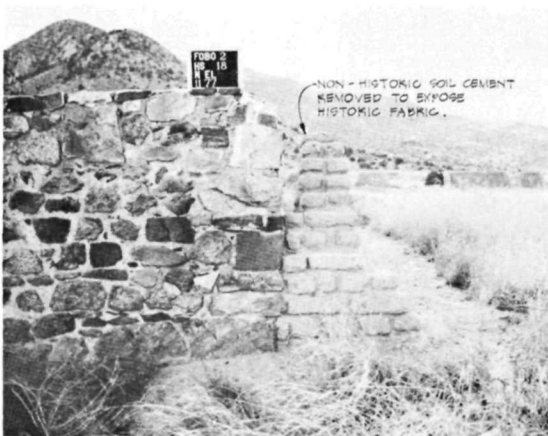
(B) HS 014 & 015 • WALL D • SOUTH ELEVATION



NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE
HISTORIC FABRIC.

RECONSTRUCTION REMOVED, 1970.

(C) HS 014 & 015 • WALL D • WEST ELEVATION



NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE
HISTORIC FABRIC.

(D) HS 018 • NORTH ELEVATION



NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE HISTORIC FABRIC.

(E) HS 018 • NORTH ELEVATION



NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE HISTORIC FABRIC.

(F) HS 018 • NORTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PGS
CHECKED	100 SHEET
APRIL 1978	54
DATE	OF 17



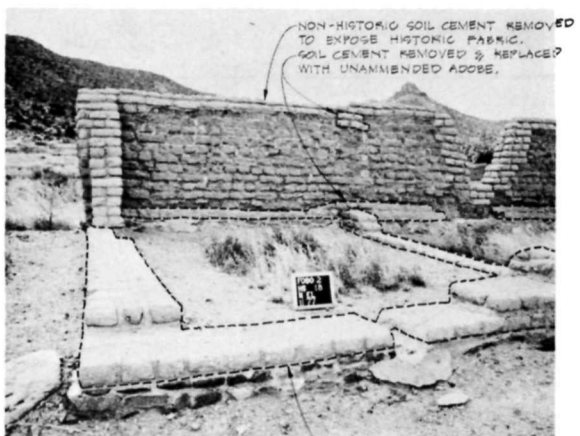
Ⓐ HS 01B • NORTH ELEVATION



Ⓑ HS 01B • NORTH ELEVATION



Ⓒ HS 01B • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ & Ⓑ.



Ⓓ HS 01B • NORTH ELEVATION



Ⓔ HS 01B • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ



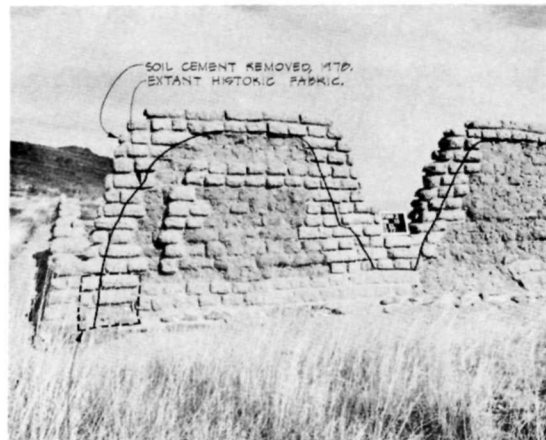
Ⓕ HS 01B • NORTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED ROBBINS	424
DRAWN	25,000
CHECKED	PCIP
APRIL, 1978	102
DATE	55
	OF 17



(A) HS 018 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (P 55)



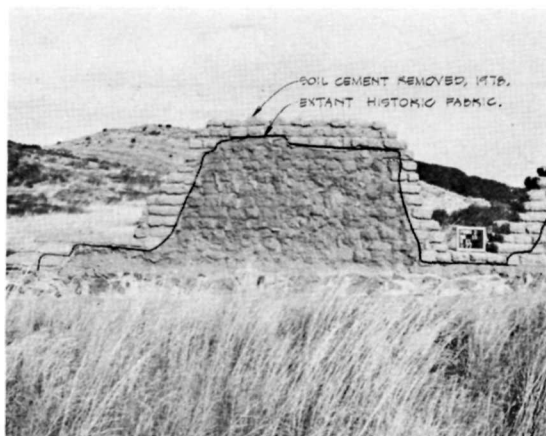
(B) HS 018 • SOUTH ELEVATION



(C) HS 018 • SOUTH ELEVATION



(D) HS 018 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (P 55) (C)



(E) HS 018 • SOUTH ELEVATION



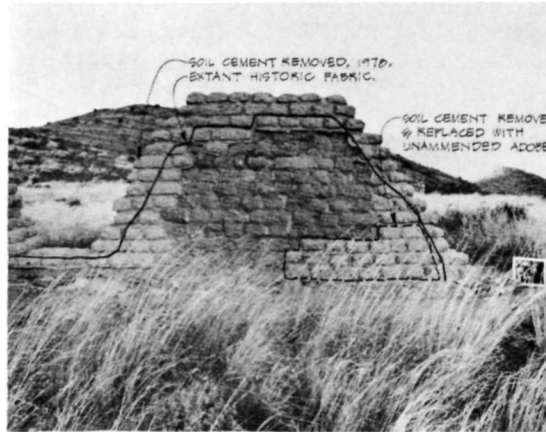
(F) HS 018 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (B)

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	PG
APRIL, 1978	104
DATE	SHEET
	56
	OF 17



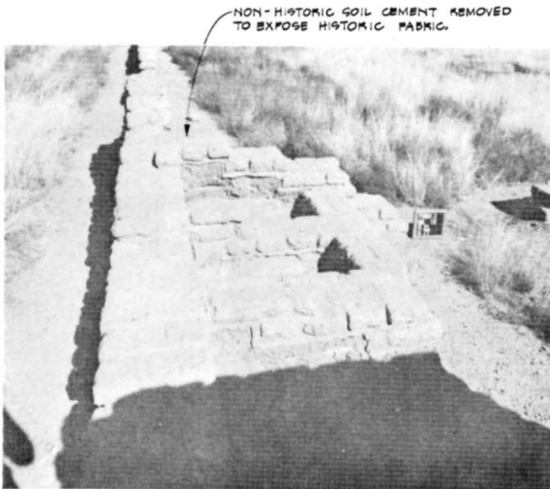
Ⓐ HS 010 • SOUTH ELEVATION



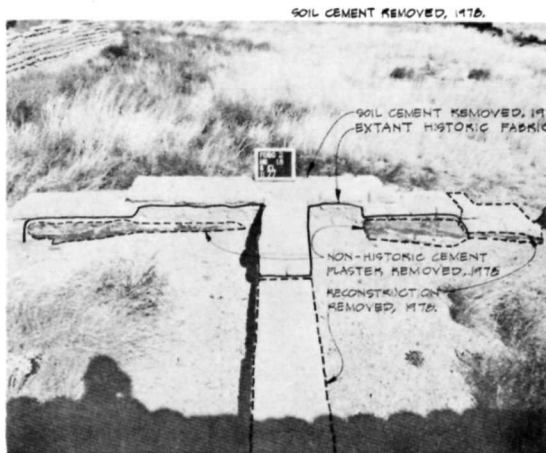
Ⓑ HS 010 • SOUTH ELEVATION



Ⓒ HS 010 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ & Ⓑ.



Ⓓ HS 010 • SOUTH ELEVATION



Ⓔ HS 010 • SOUTH ELEVATION

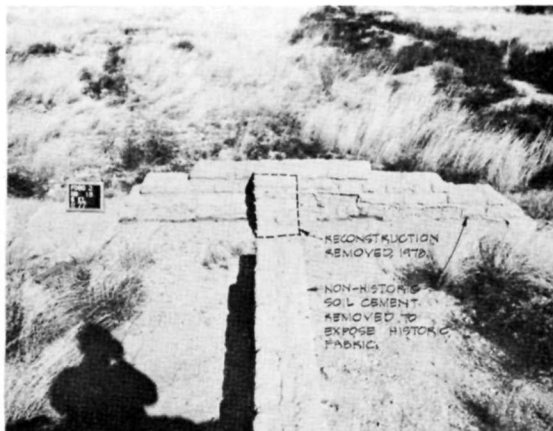


Ⓕ HS 010 • SOUTH ELEVATION

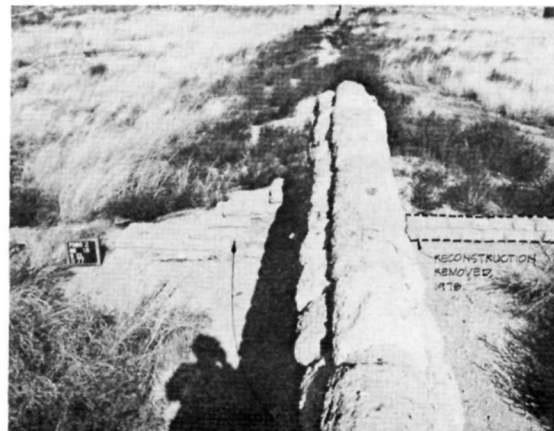
STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	
APRIL, 1978	
DATE	

PCIP	SHEET
103	57
OF	



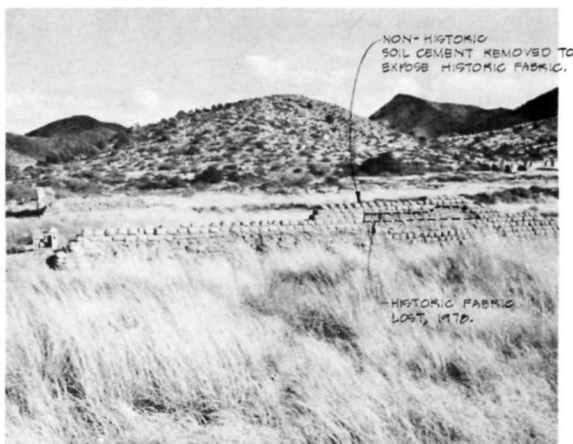
Ⓐ HS 010 • SOUTH ELEVATION



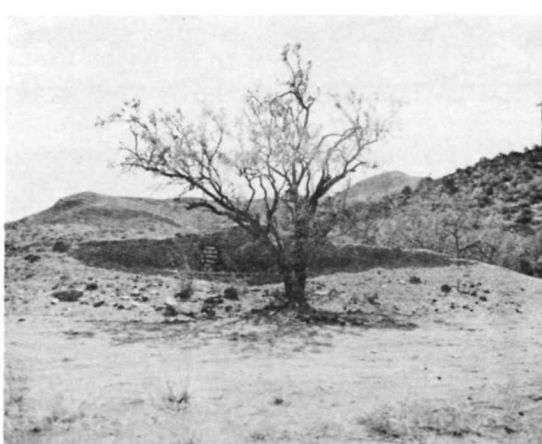
Ⓑ HS 010 • SOUTH ELEVATION



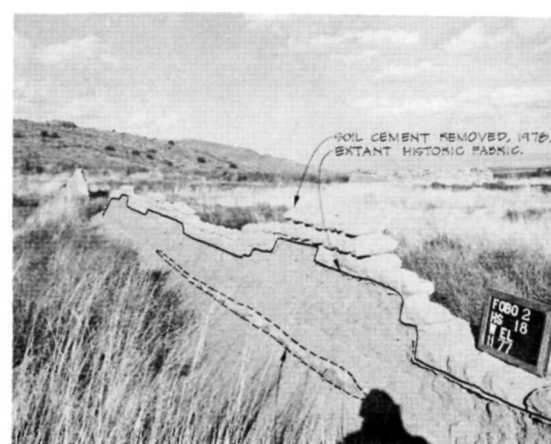
Ⓒ HS 010 • SOUTH ELEVATION



Ⓓ HS 010 • WEST ELEVATION



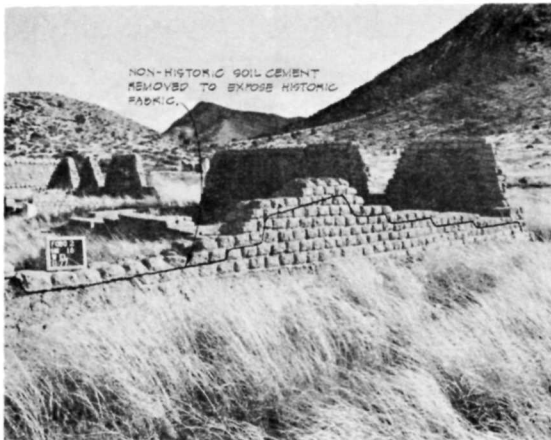
Ⓔ HS 010 • WEST ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS Ⓓ



Ⓕ HS 010 • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
102	SHEET
CHECKED	58
APRIL 1978	OF 17
DATE	



Ⓐ HS 010 • WEST ELEVATION



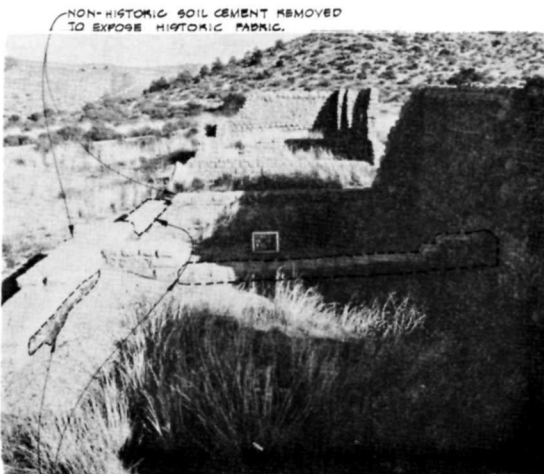
Ⓑ HS 010 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.



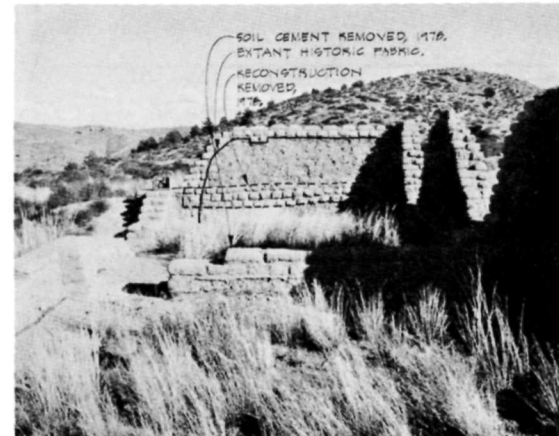
Ⓒ HS 010 • WEST ELEVATION



Ⓓ HS 010 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ.



Ⓔ HS 010 • WEST ELEVATION



Ⓕ HS 010 • WEST ELEVATION

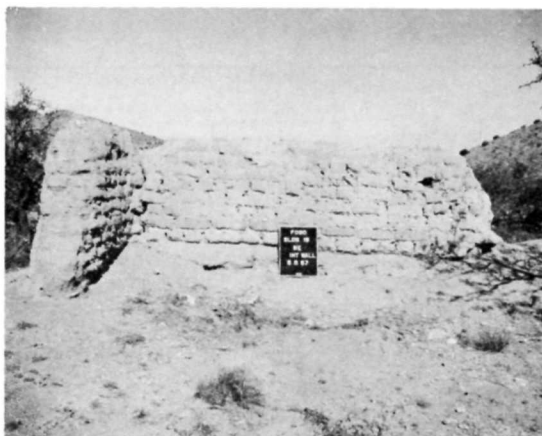
STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PAGE
CHECKED	108
APRIL 1970	SHEET
DATE	59
	OF



RECONSTRUCTION REMOVED, 1970.

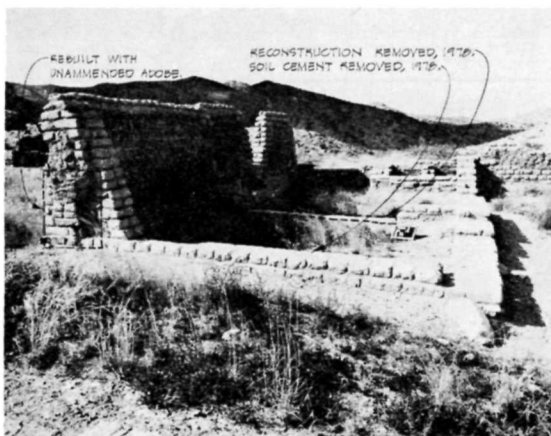
(A) HS 01B • EAST ELEVATION



(B) HS 01B • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (A)



(C) HS 01B • EAST ELEVATION



(D) HS 01B • EAST ELEVATION



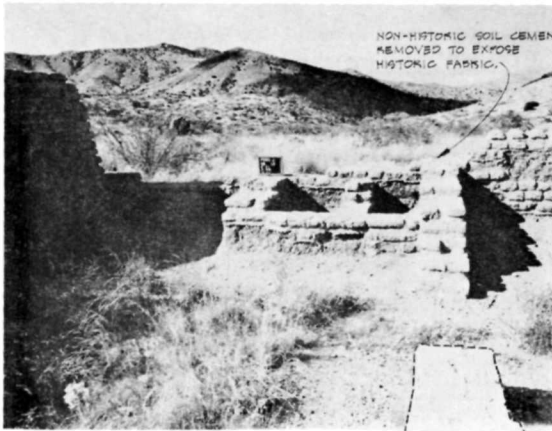
(E) HS 01B • EAST ELEVATION



(F) HS 01B • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (E)

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	60
APRIL 1978	OF 17
DATE	



(A) HS 010 - EAST ELEVATION



(B) HS 010 - EAST ELEVATION



(C) HS 010 - EAST ELEVATION
BEFORE 1977 STABILIZATION.
SAME VIEW AS (B) & (D).



(D) HS 010 - EAST ELEVATION



(E) HS 010 - EAST ELEVATION



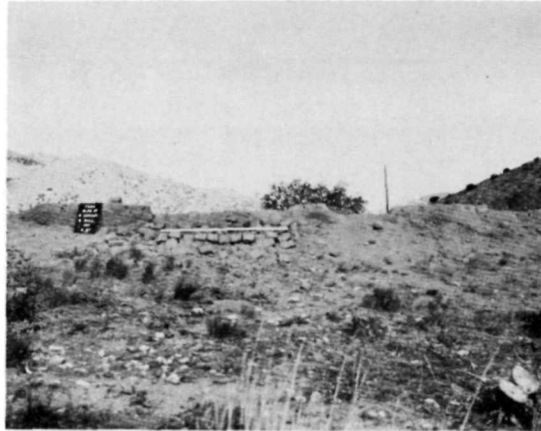
(F) HS 010 - EAST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

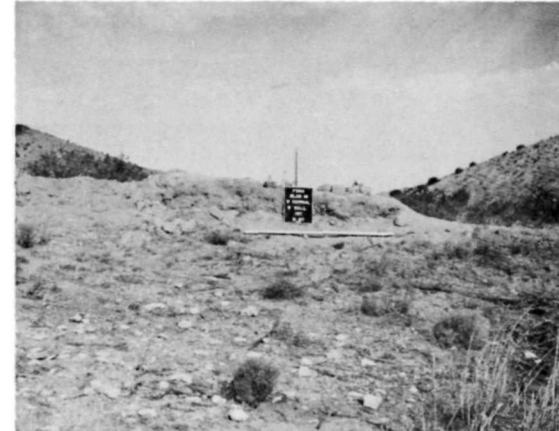
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PGP
CHECKED	103
APRIL, 1978	61
DATE	OF 17



Ⓐ HS 010 • EAST ELEVATION



Ⓑ HS 010 • EAST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ.



Ⓒ HS 010 • EAST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ.

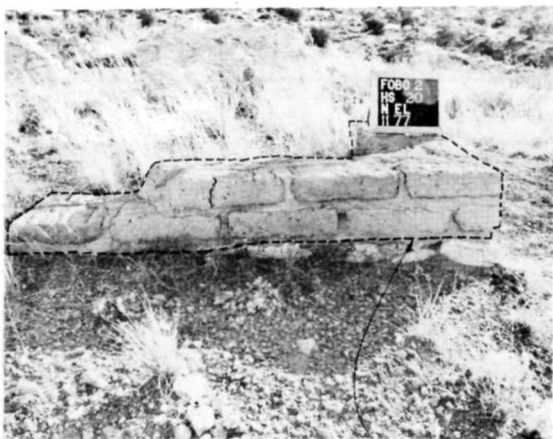


Ⓓ HS 010 • EAST ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS Ⓐ.



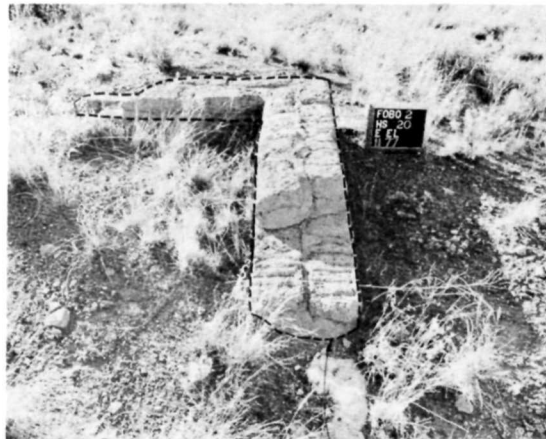
STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED ROBBINS	424
DRAWN	25,000
CHECKED	SHEET
APRIL 1978	62
DATE	OF 17



RECONSTRUCTION REMOVED, 1976.

Ⓐ HS 020 • NORTH ELEVATION



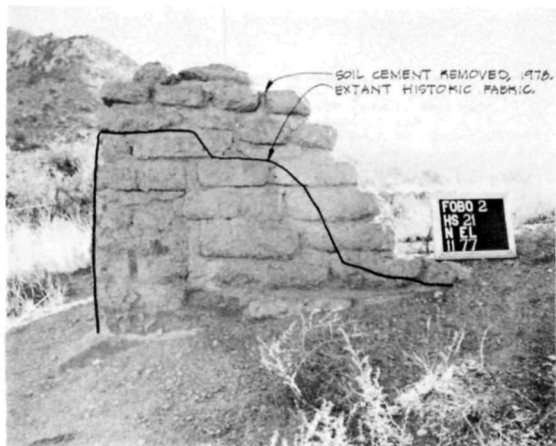
RECONSTRUCTION REMOVED, 1976.

Ⓑ HS 020 • EAST ELEVATION



RECONSTRUCTION REMOVED, 1976.

Ⓒ HS 020 • SOUTH ELEVATION



SOIL CEMENT REMOVED, 1976.
EXTANT HISTORIC FABRIC.

Ⓓ HS 021 • NORTH ELEVATION



SOIL CEMENT REMOVED, 1976.
EXTANT HISTORIC FABRIC.

Ⓔ HS 021 • NORTH ELEVATION

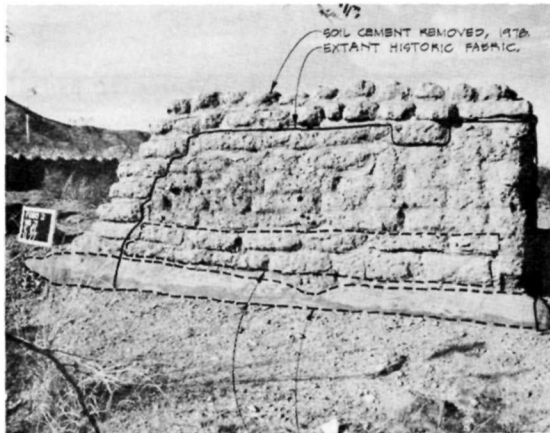


NON-HISTORIC CEMENT PLASTER REMOVED, 1976.
SOIL CEMENT REMOVED, 1976.
EXTANT HISTORIC FABRIC.

Ⓕ HS 021 • EAST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

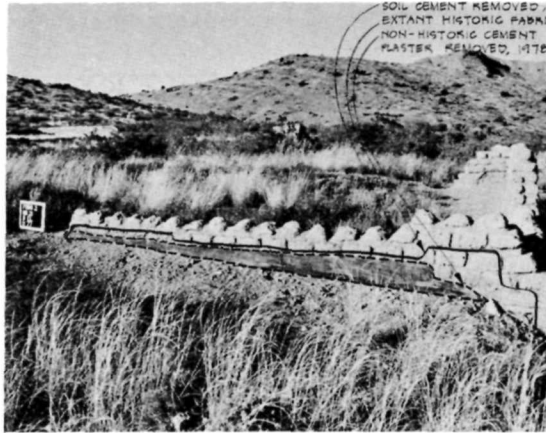
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	
APRIL, 1978	
DATE	



SOIL CEMENT REMOVED, 1978.
EXTANT HISTORIC FABRIC.

NON-HISTORIC CEMENT PLASTER
REMOVED, 1978.
SOIL CEMENT RETAINED.

(A) HS 021 • EAST ELEVATION



SOIL CEMENT REMOVED, 1978.
EXTANT HISTORIC FABRIC.
NON-HISTORIC CEMENT
PLASTER REMOVED, 1978.

(B) HS 021 • SOUTH ELEVATION



NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE
HISTORIC FABRIC, 1978.

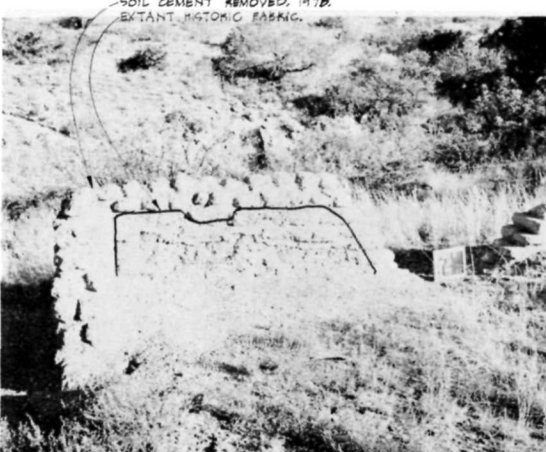
(C) HS 021 • WEST ELEVATION



NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE
HISTORIC FABRIC.

FOBO 2
HS 21
S EL
1177

(D) HS 021 • SOUTH ELEVATION



SOIL CEMENT REMOVED, 1978.
EXTANT HISTORIC FABRIC.

(E) HS 021 • WEST ELEVATION



(F) HS 021 • WEST ELEVATION
BEFORE 1967 STABILIZATION

• SAME VIEW AS (E) & (C) •

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

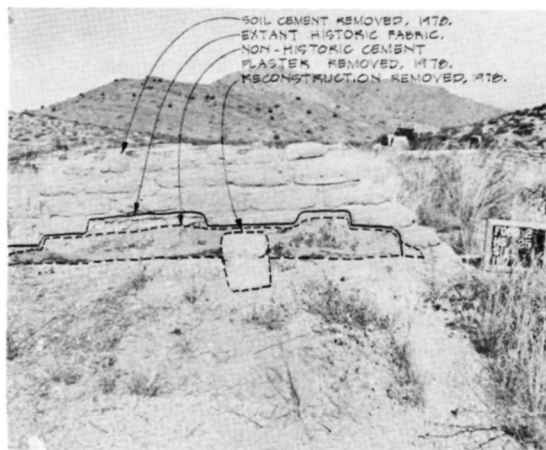
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	64
APRIL, 1978	OF 47
DATE	



Ⓐ HS 021 • EAST ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS Ⓐ.

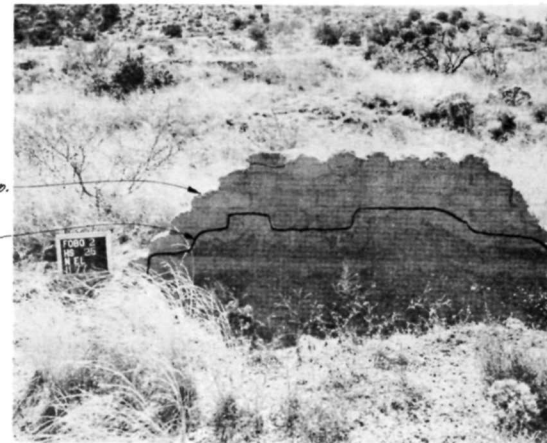


Ⓓ HS 025 • EAST ELEVATION



Ⓔ HS 025 • SOUTH ELEVATION

SOIL CEMENT
REMOVED, 1978.
EXISTANT
HISTORIC
FABRIC.



Ⓒ HS 025 • NORTH ELEVATION



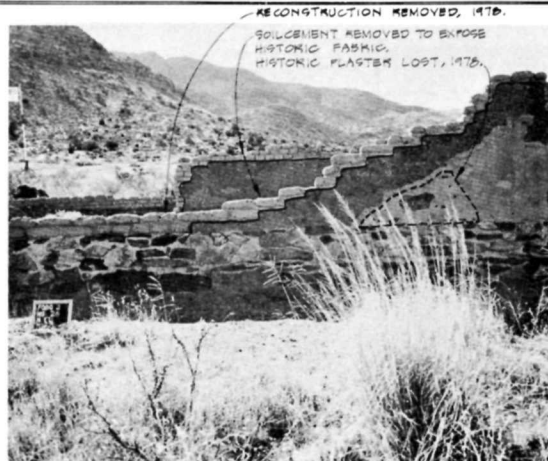
Ⓕ HS 025 • WEST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	108
APRIL, 1978	SHEET
DATE	65
	OF 17



Ⓐ HS 026 • NORTH ELEVATION



Ⓑ HS 026 • NORTH ELEVATION



Ⓒ HS 026 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.



Ⓓ HS 026 • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ.



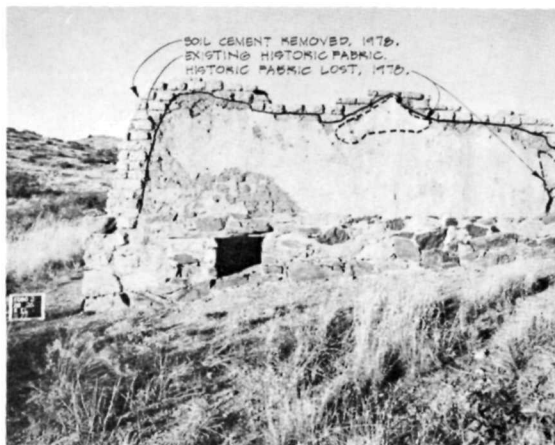
Ⓔ HS 026 • EAST ELEVATION



Ⓕ HS 026 • EAST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓔ.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	66
APRIL, 1978	OF 17
DATE	



(A) HS 026 • SOUTH ELEVATION



(B) HS 026 • SOUTH ELEVATION



(C) HS 026 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (A).



(D) HS 026 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS (C).



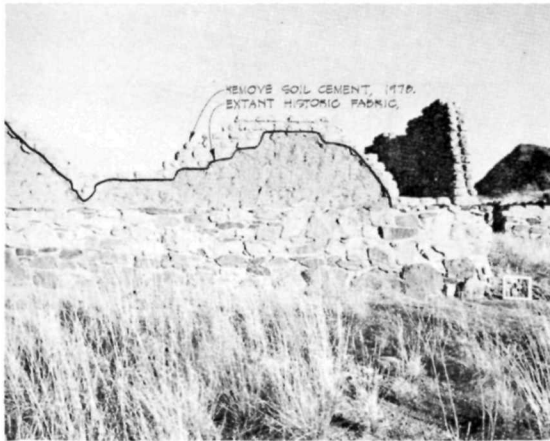
(E) HS 026 • SOUTH ELEVATION



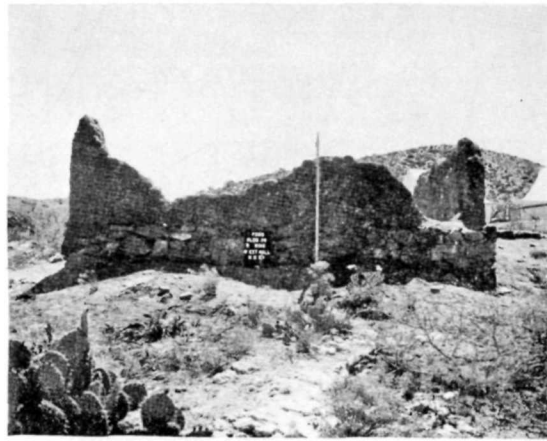
(F) HS 026 • SOUTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	100 SHEET
APRIL, 1978	67
DATE	17



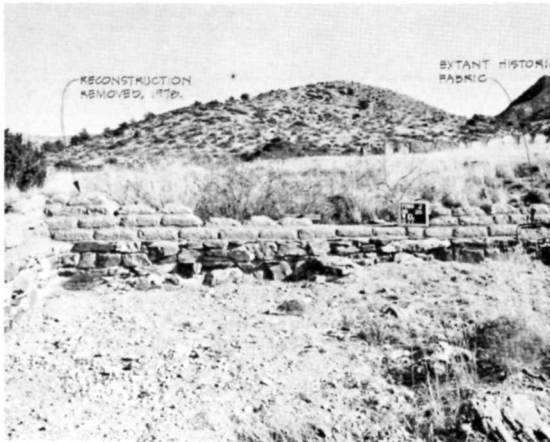
Ⓐ HS 026 • WEST ELEVATION



Ⓑ HS 026 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ



Ⓒ HS 026 • WEST ELEVATION



Ⓓ HS 026 • WEST ELEVATION



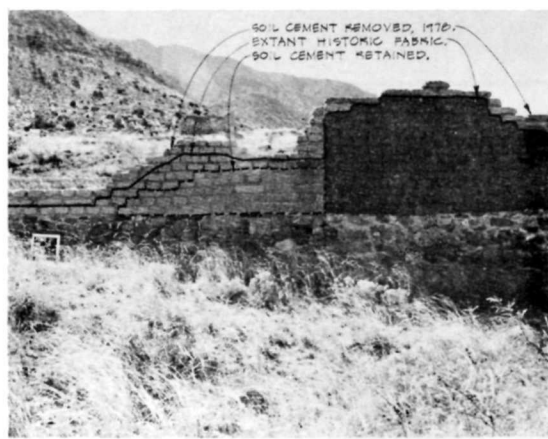
Ⓔ HS 026 • WEST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

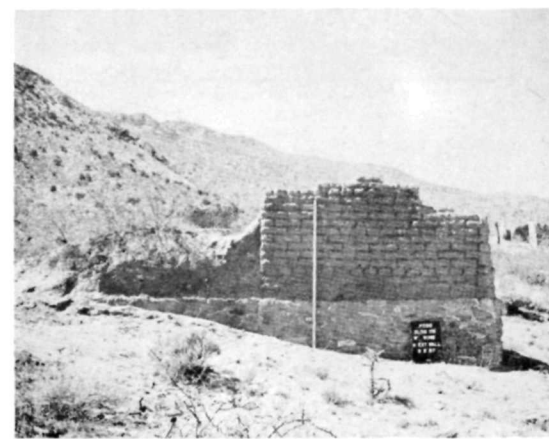
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	TRIP
CHECKED	DATE
APRIL, 1978	DATE
	SHEET
	60
	of 17



Ⓐ HS 020 * NORTH ELEVATION



Ⓑ HS 020 * NORTH ELEVATION



Ⓒ HS 020 * NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ



Ⓓ HS 020 * EAST ELEVATION



Ⓔ HS 020 * EAST ELEVATION



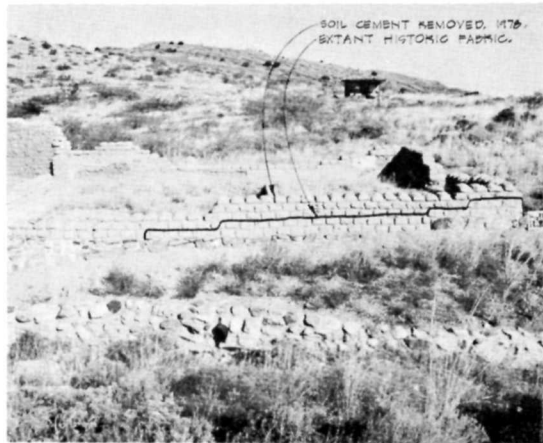
Ⓕ HS 020 * SOUTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE - NATIONAL HISTORIC SITE

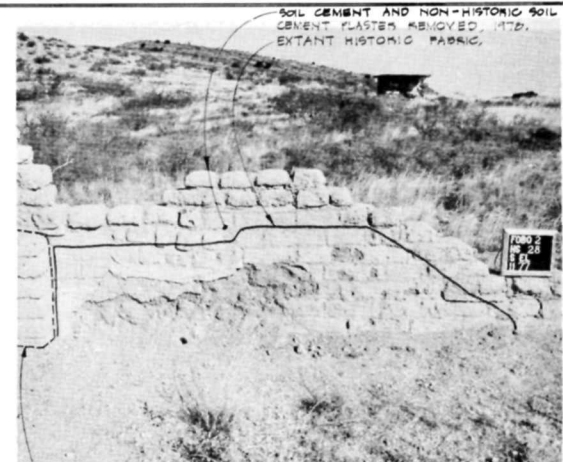
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	PGS
APRIL 1978	108
DATE	SHEET
	97



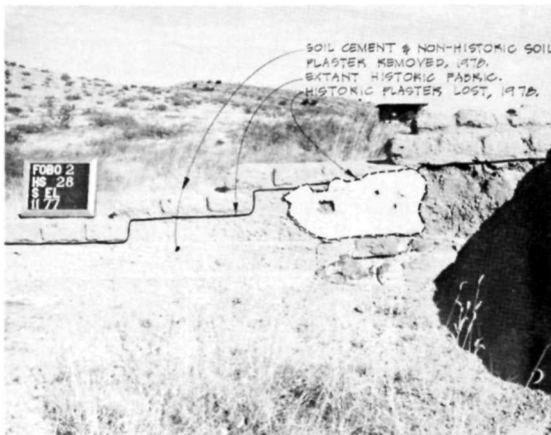
(A) HS 028 * SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (P).



(B) HS 028 * SOUTH ELEVATION



(C) HS 028 * SOUTH ELEVATION



(D) HS 028 * SOUTH ELEVATION



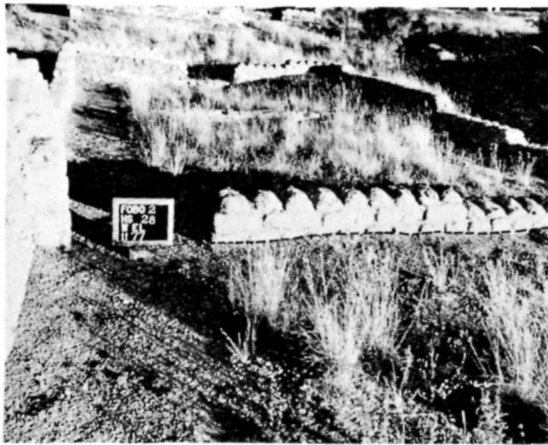
(E) HS 028 * WEST ELEVATION



(F) HS 028 * WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (E).

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	70
APRIL, 1978	9-17
DATE	



Ⓐ HS 028 * WEST ELEVATION

RECONSTRUCTION REMOVED, 1978.



Ⓒ HS 034 * NORTH ELEVATION



Ⓓ HS 034 * NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ



Ⓔ HS 034 * EAST ELEVATION

RECONSTRUCTION REMOVED, 1978.



Ⓕ HS 034 * SOUTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	71
APRIL 1978	OF 17
DATE	



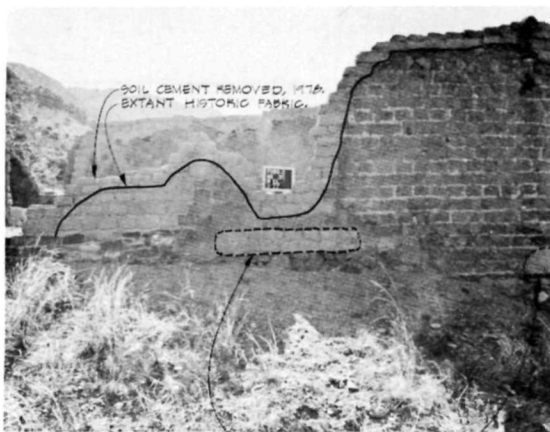
Ⓐ HS 035 • NORTH ELEVATION



Ⓑ HS 035 • NORTH ELEVATION



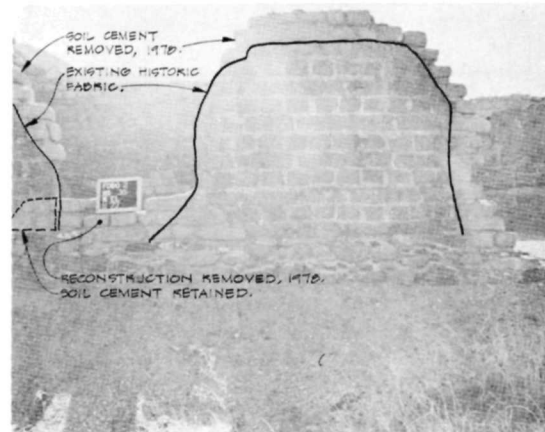
Ⓒ HS 035 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓑ.



Ⓓ HS 035 • NORTH ELEVATION



Ⓔ HS 035 • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓓ.



Ⓕ HS 035 • NORTH ELEVATION

Ⓓ & Ⓔ ARE OUT OF SEQUENCE AND SHOULD BE BETWEEN Ⓕ & Ⓖ

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PAGE
100	SHEET
CHECKED	72
APRIL, 1978	OF 17
DATE	



Ⓐ HS 035 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.



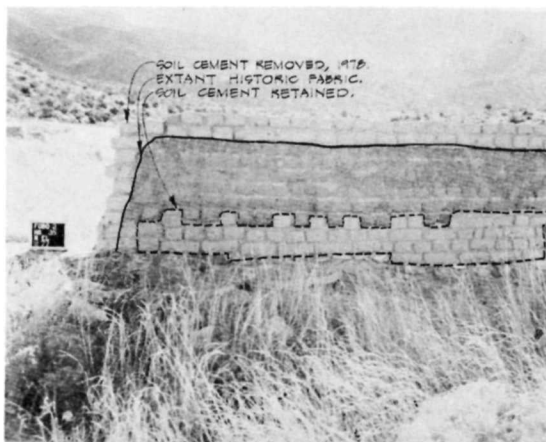
Ⓑ HS 035 • NORTH ELEVATION



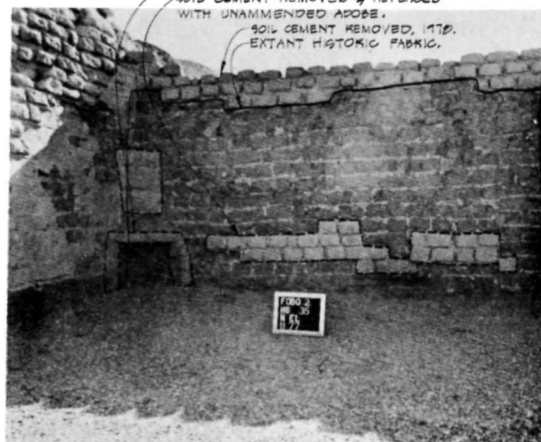
Ⓒ HS 035 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.



Ⓓ HS 035 • NORTH ELEVATION



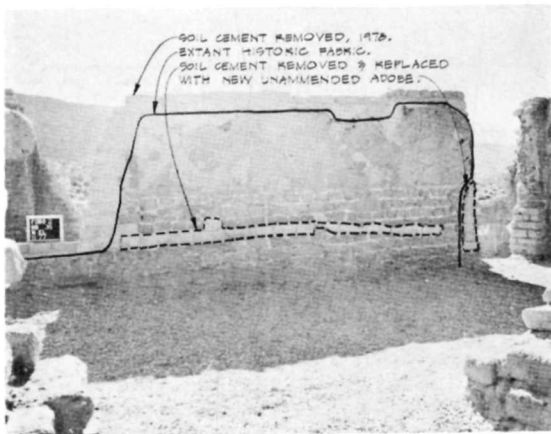
Ⓔ HS 035 • NORTH ELEVATION



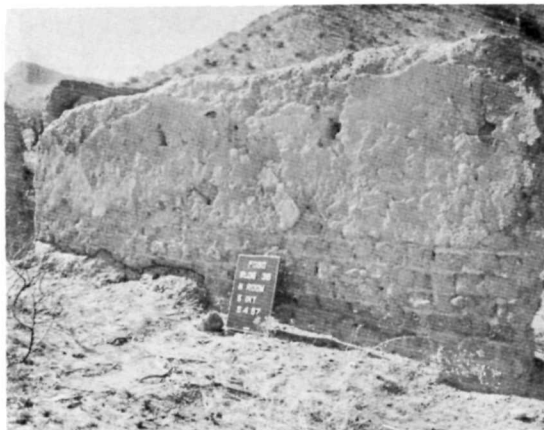
Ⓕ HS 035 • NORTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

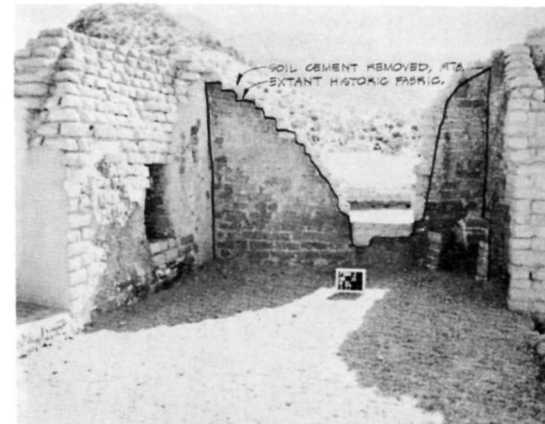
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	TRIP
	193
CHECKED	SHEET
APRIL, 1978	73
DATE	17



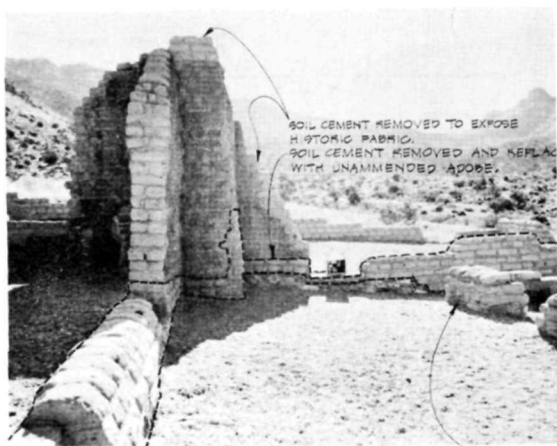
Ⓐ HS 033 • NORTH ELEVATION



Ⓐ HS 033 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.



Ⓒ HS 033 • NORTH ELEVATION



Ⓓ HS 035 • NORTH ELEVATION



Ⓓ HS 035 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ.



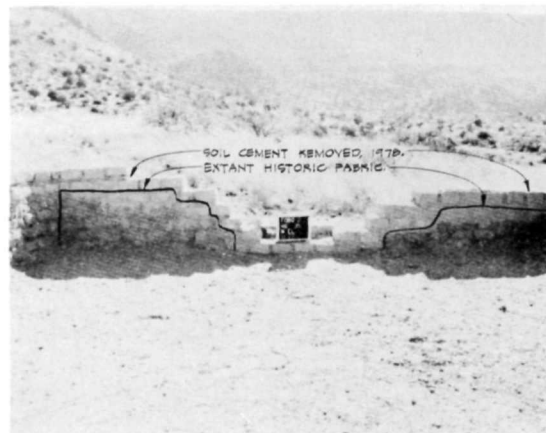
Ⓔ HS 035 • NORTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

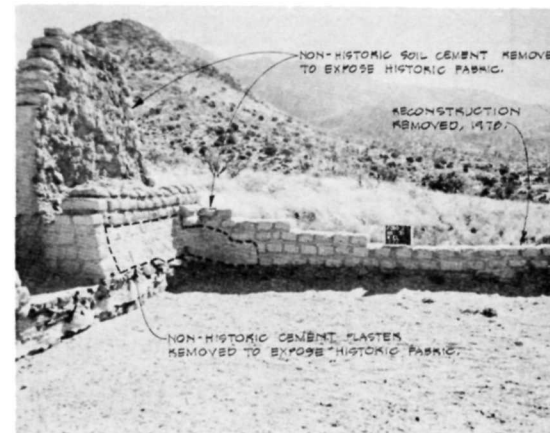
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	JOB
APRIL, 1978	74
DATE	OF 17



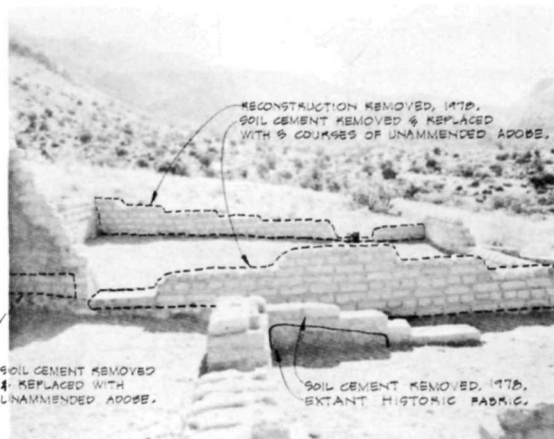
A HS 035 • NORTH ELEVATION



B HS 035 • NORTH ELEVATION



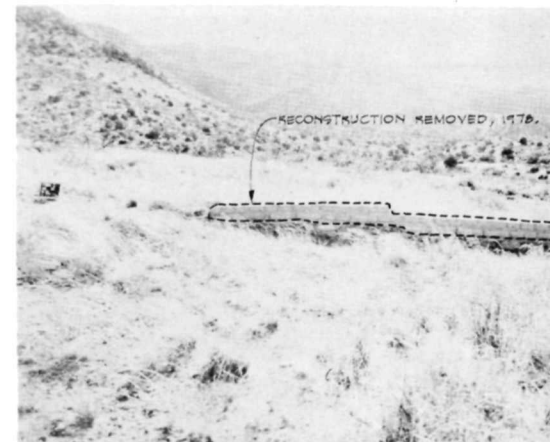
C HS 035 • NORTH ELEVATION



D HS 035 • NORTH ELEVATION



E HS 035 • NORTH ELEVATION



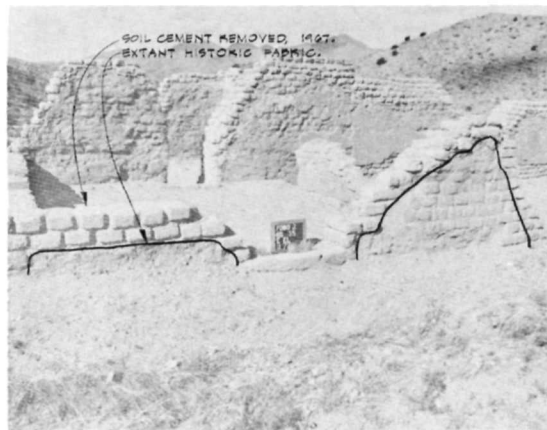
F HS 035 • NORTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	108
APRIL, 1978	SHEET
DATE	75
	OF 17



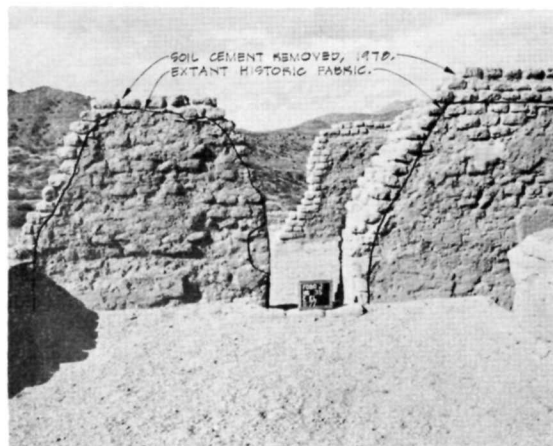
(A) HS 035 • NORTH ELEVATION



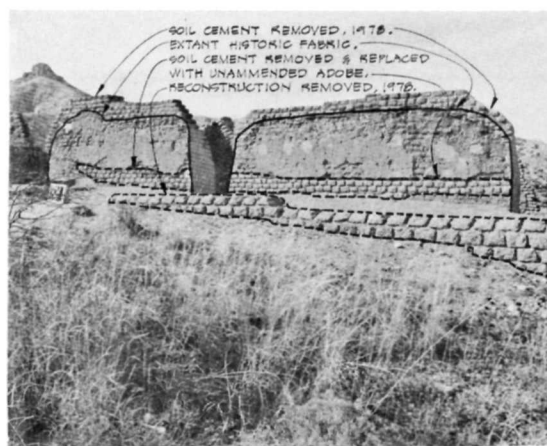
(B) HS 035 • EAST ELEVATION



(C) HS 035 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (B).



(D) HS 035 • EAST ELEVATION



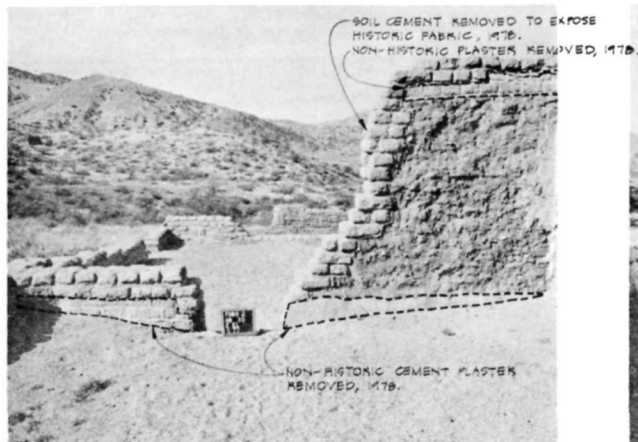
(E) HS 035 • EAST ELEVATION



(F) HS 035 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (B).

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

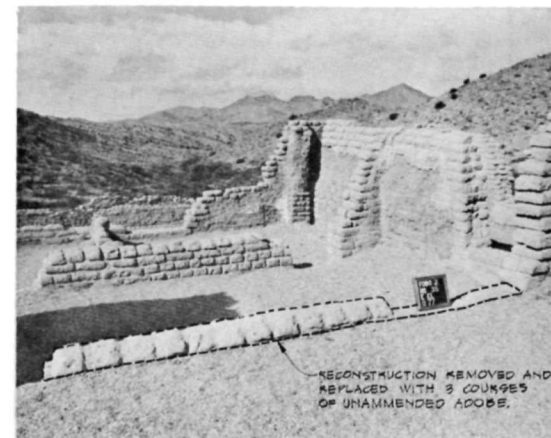
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	70
APRIL, 1978	OF 47
DATE	



Ⓐ HS 035 • EAST ELEVATION



Ⓑ HS 035 • EAST ELEVATION



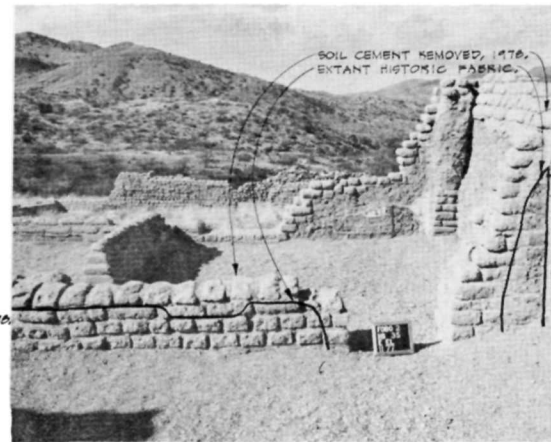
Ⓒ HS 035 • EAST ELEVATION



Ⓓ HS 035 • EAST ELEVATION



Ⓔ HS 035 • EAST ELEVATION



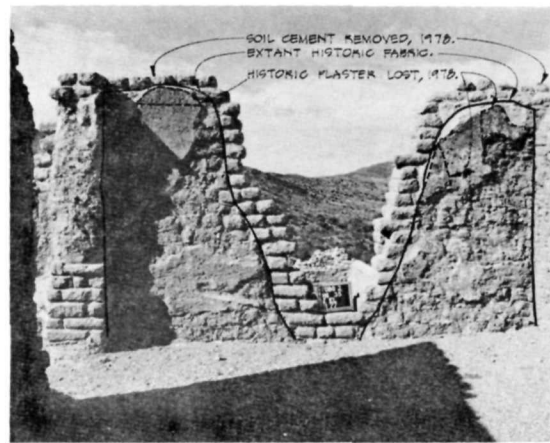
Ⓕ HS 035 • EAST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

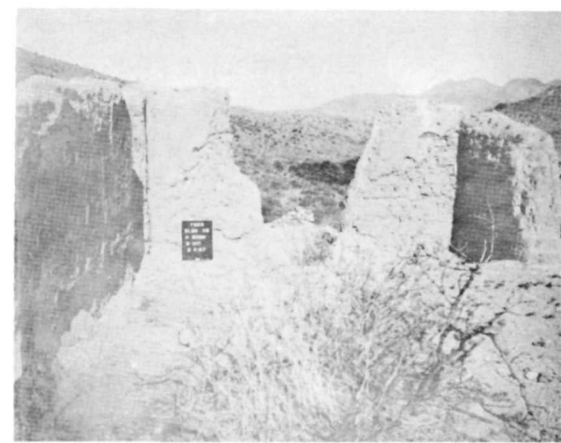
PREPARED ROBBINS DRAWN	DRAWING NO. 424 25,000
CHECKED APRIL, 1978 DATE	SHEET 77 OF 97



(A) HS 035 • EAST ELEVATION



(B) HS 035 • EAST ELEVATION



(C) HS 035 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS (D)



(D) HS 035 • EAST ELEVATION



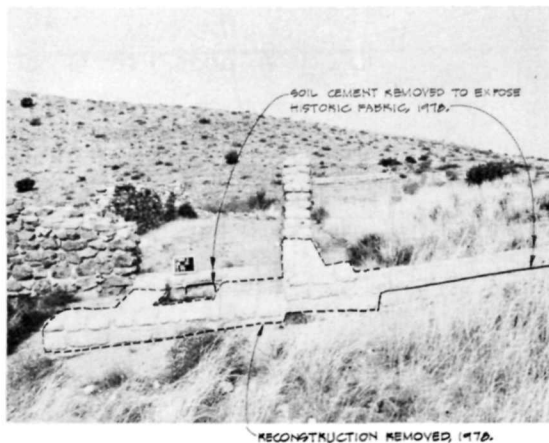
(E) HS 035 • EAST ELEVATION



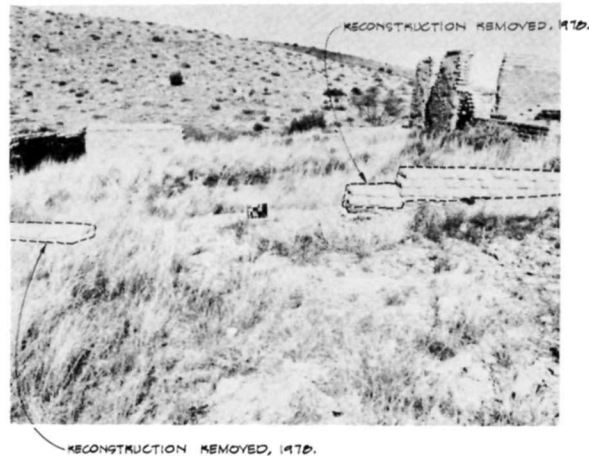
(F) HS 035 • EAST ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

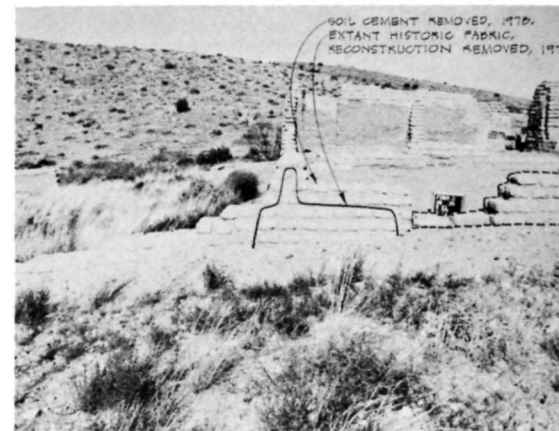
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	70
APRIL, 1978	OF 17
DATE	



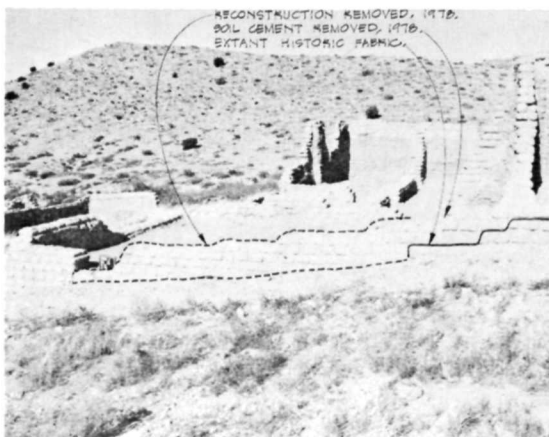
Ⓐ HS 035 • SOUTH ELEVATION



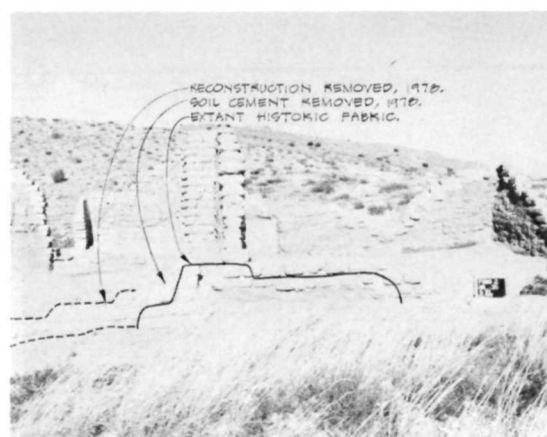
Ⓑ HS 035 • SOUTH ELEVATION



Ⓒ HS 035 • SOUTH ELEVATION



Ⓓ HS 035 • SOUTH ELEVATION



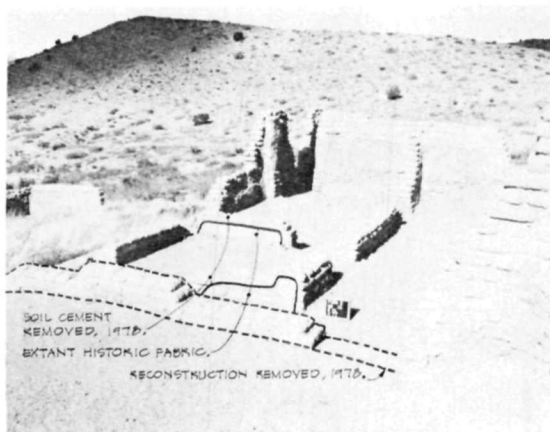
Ⓔ HS 035 • SOUTH ELEVATION



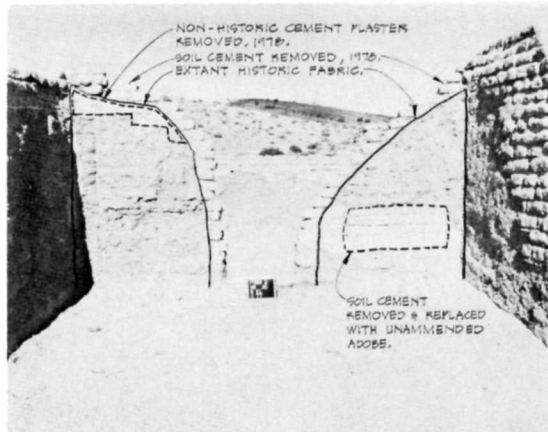
Ⓕ HS 035 • SOUTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

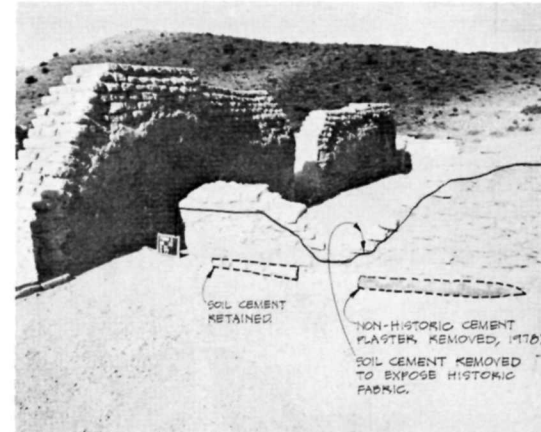
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PGP
183	SHEET
CHECKED	79
APRIL, 1978	OF 17
DATE	



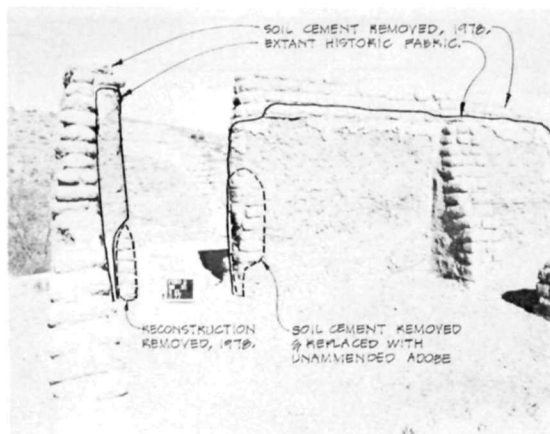
Ⓐ HS 035 • SOUTH ELEVATION



Ⓑ HS 035 • SOUTH ELEVATION



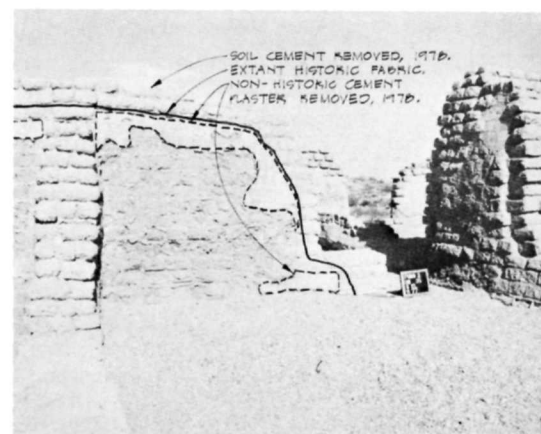
Ⓒ HS 035 • SOUTH ELEVATION



Ⓓ HS 035 • SOUTH ELEVATION



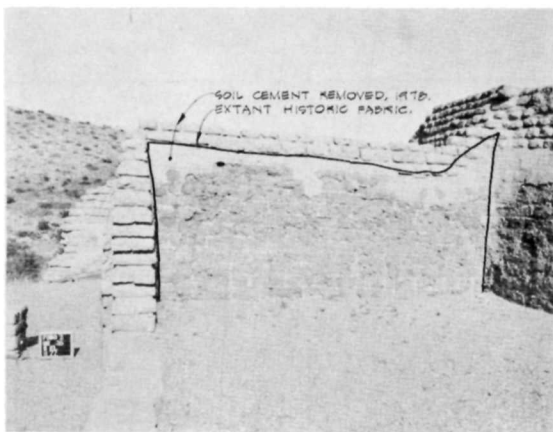
Ⓔ HS 035 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ



Ⓕ HS 035 • SOUTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

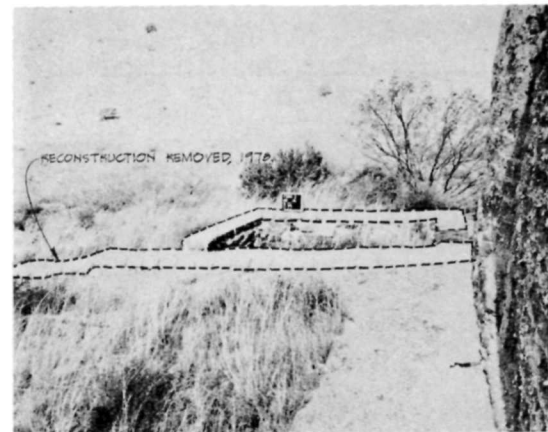
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
	103
CHECKED	SHEET
APRIL, 1978	80
DATE	of 41



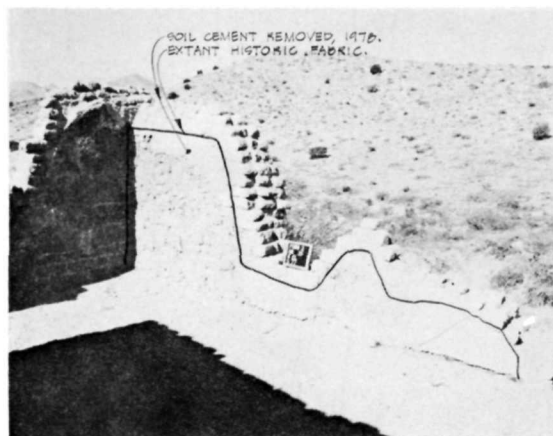
Ⓐ HS 035 • SOUTH ELEVATION



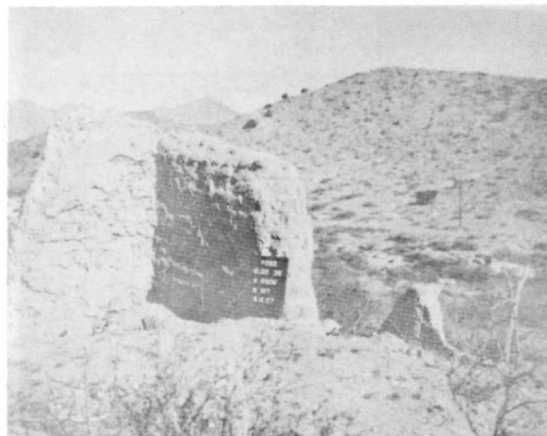
Ⓑ HS 035 • SOUTH ELEVATION



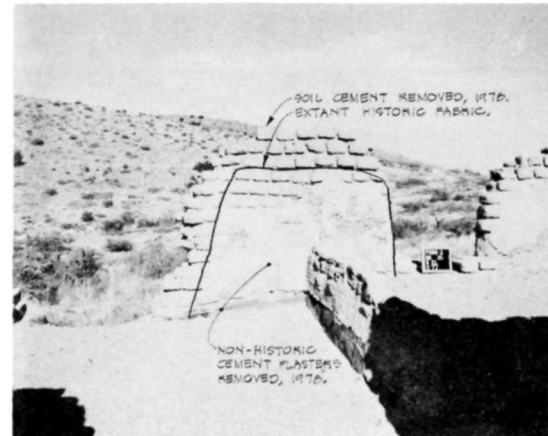
Ⓒ HS 035 • SOUTH ELEVATION



Ⓓ HS 035 • SOUTH ELEVATION



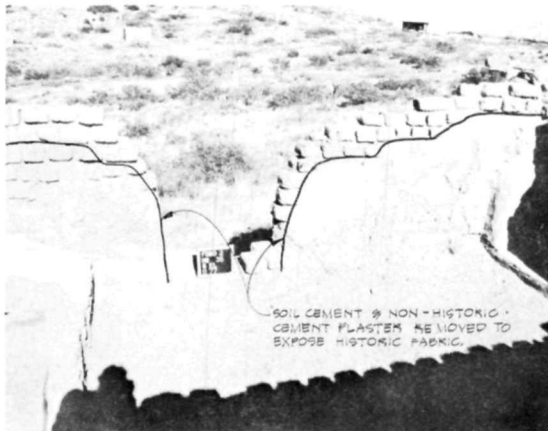
Ⓔ HS 035 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ.



Ⓕ HS 035 • SOUTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

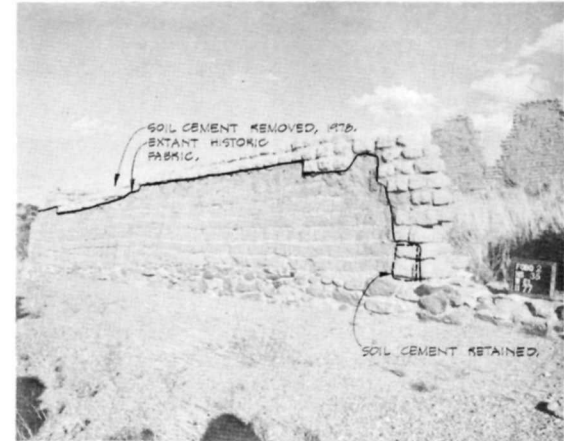
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	51
APRIL, 1978	OF 17
DATE	



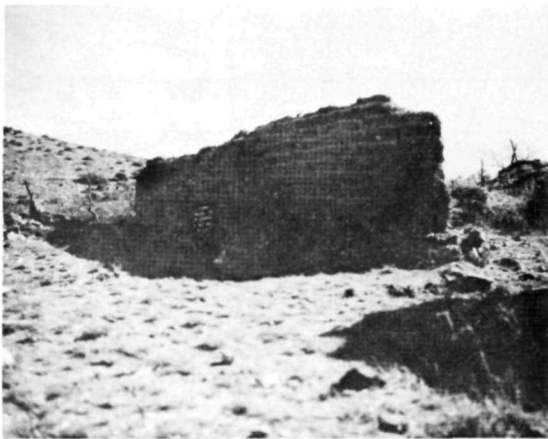
Ⓐ HS 035 • SOUTH ELEVATION



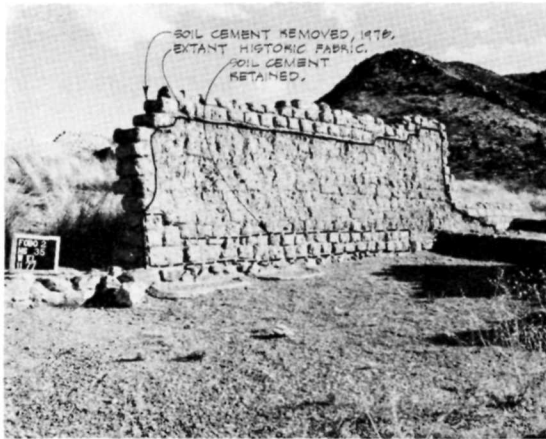
Ⓑ HS 035 • SOUTH ELEVATION



Ⓒ HS 035 • WEST ELEVATION



Ⓓ HS 035 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ.



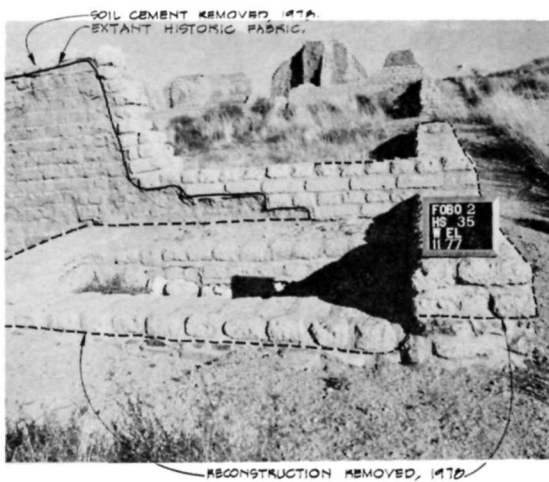
Ⓔ HS 035 • WEST ELEVATION



Ⓕ HS 035 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
LOG	SHEET
CHECKED	82
APRIL, 1978	OF 17
DATE	



Ⓐ HS 035 • WEST ELEVATION



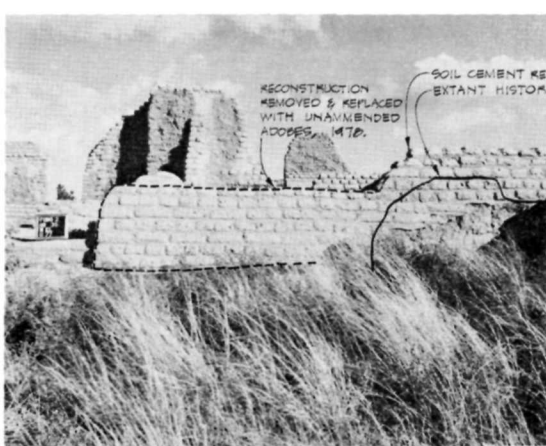
Ⓑ HS 035 • WEST ELEVATION



Ⓒ HS 035 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.



Ⓓ HS 035 • WEST ELEVATION



Ⓔ HS 035 • WEST ELEVATION



Ⓕ HS 035 • WEST ELEVATION
DURING 1967 STABILIZATION.
SAME VIEW AS Ⓐ.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	03
APRIL, 1978	OF 17
DATE	



NON-HISTORIC SOIL CEMENT
REMOVED TO EXPOSE
HISTORIC FABRIC.

NON-HISTORIC CEMENT PLASTER
REMOVED, 1970.

Ⓐ HS 035 • WEST ELEVATION



NON-HISTORIC SOIL
CEMENT REMOVED TO
EXPOSE HISTORIC FABRIC.

NON-HISTORIC CEMENT PLASTER
REMOVED, 1970.

Ⓑ HS 035 • WEST ELEVATION



Ⓒ HS 035 • WEST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ & Ⓑ.



NON-HISTORIC SOIL CEMENT & CEMENT PLASTER
REMOVED TO EXPOSE HISTORIC FABRIC, 1970.

Ⓓ HS 035 • WEST ELEVATION



FOBO
BLDG 35
E WALL
INT
ROOM 6
B 10 67

Ⓔ HS 035 • WEST ELEVATION
BEFORE 1967 STABILIZATION

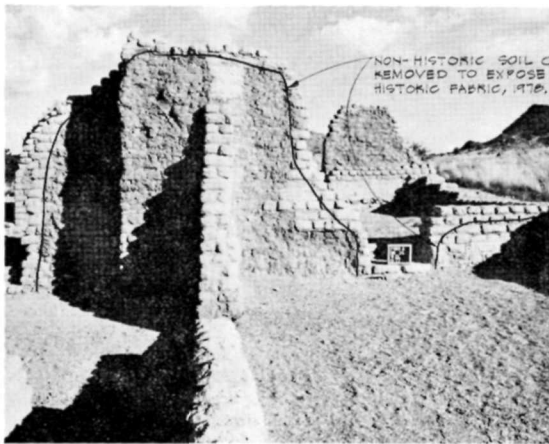


NON-HISTORIC SOIL CEMENT REMOVED & REPLACED
WITH UNAMENDED ADOBE EXCEPT STAKES WHICH
WERE REPLACED WITH NEW SOIL CEMENT ADOBE.

Ⓕ HS 035 • WEST ELEVATION

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	108
APRIL 1978	SHEET
DATE	84
	97

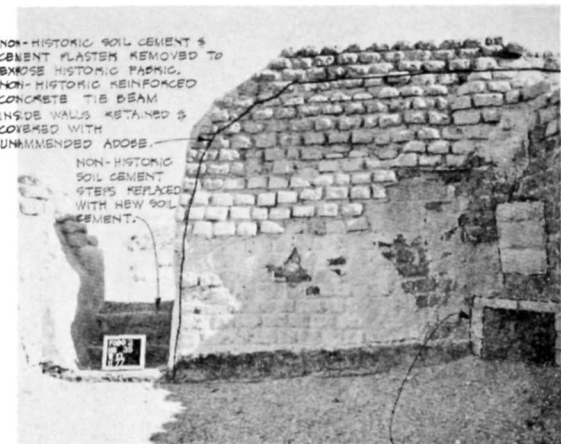
STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE



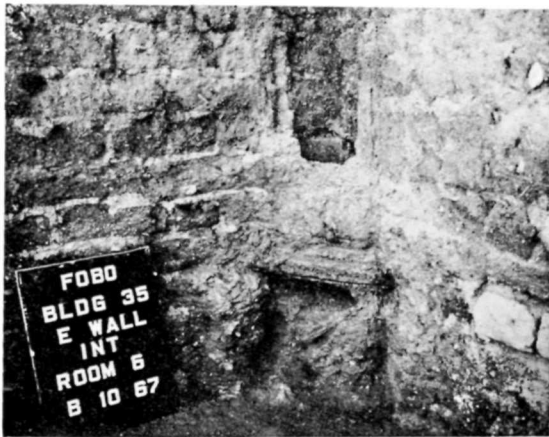
Ⓐ HS 035 • WEST ELEVATION



Ⓑ HS 035 • WEST ELEVATION



Ⓒ HS 035 • WEST ELEVATION



Ⓓ HS 035 • WEST ELEVATION BEFORE 1967 STABILIZATION. SAME FIREPLACE AS AT RIGHT OF Ⓒ.



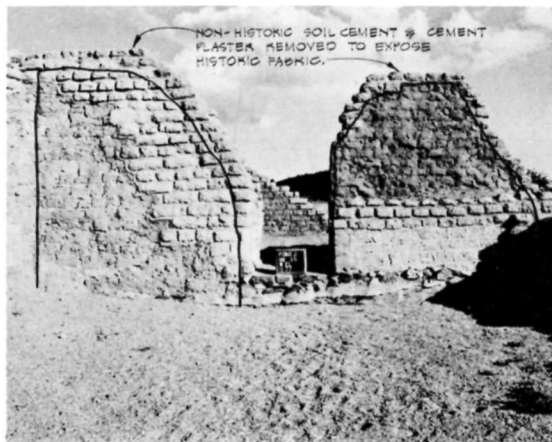
Ⓔ HS 035 • WEST ELEVATION



Ⓕ HS 035 • WEST ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

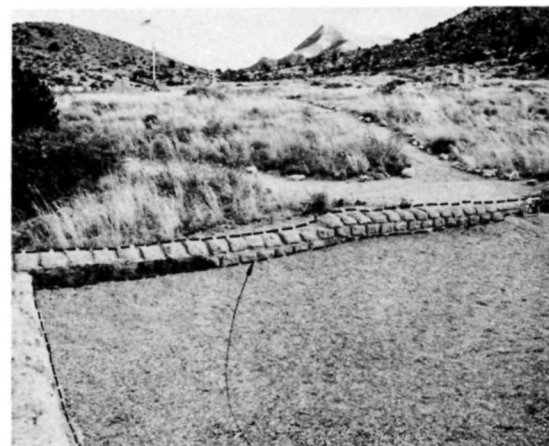
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
PROJ	05
LOG	OF 97
CHECKED	
APRIL 1978	
DATE	



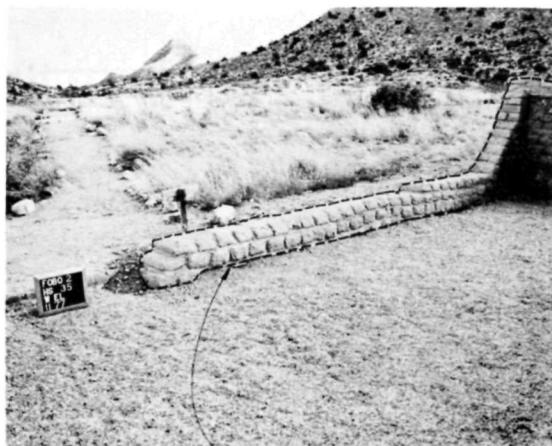
(A) HS 035 • WEST ELEVATION



(B) HS 035 • WEST ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS (A)



(C) HS 035 • WEST ELEVATION



(D) HS 035 • WEST ELEVATION



(E) HS 035 • WEST ELEVATION



(F) HS 035 • SOUTH ELEVATION

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
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APRIL, 1978	
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Ⓐ HS 035 • WEST ELEVATION



Ⓑ HS 035 • NORTH ELEVATION



Ⓒ HS 035 • SOUTH ELEVATION



Ⓓ HS 035 • WEST ELEVATION



Ⓔ HS 035 • NORTH ELEVATION

NOTE

ALL NON-HISTORIC MATERIALS REMOVED
FROM BUTTRESSES ALONG THE
WEST WALL, 1978. NEITHER
BUTTRESS IS RE-STABILIZED.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

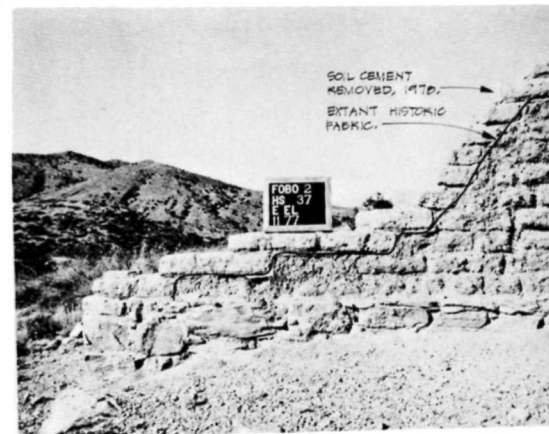
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	DATE
APRIL, 1978	SHEET
	17



Ⓐ HS 037 • NORTH ELEVATION



Ⓑ HS 037 • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ.



Ⓒ HS 037 • EAST ELEVATION



Ⓓ HS 037 • EAST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓒ.



Ⓔ HS 037 • SOUTH ELEVATION



Ⓕ HS 037 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓔ.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCIP
CHECKED	102
APRIL 1978	SHEET
DATE	9-77

RECONSTRUCTION REMOVED, 1970.



④ HS 043 • WEST ELEVATION

RECONSTRUCTION REMOVED, 1970.



⑤ HS 043 • EAST ELEVATION



⑥ HS 043 • EAST ELEVATION
BEFORE 1967 STABILIZATION.

SOIL CEMENT REMOVED, 1970.
EXTANT HISTORIC FABRIC.



⑦ HS 035 • NORTH ELEVATION

NON-HISTORIC SOIL CEMENT REMOVED
TO EXPOSE HISTORIC FABRIC.



⑧ HS 035 • SOUTH ELEVATION



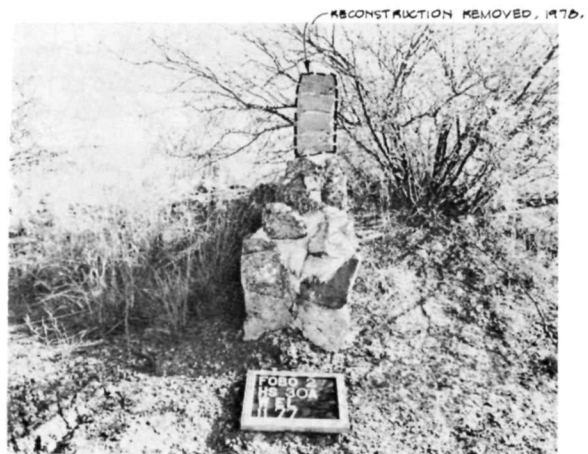
⑨ HS 035 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION
SAME VIEW AS ⑧

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	17
APRIL, 1978	DATE



Ⓐ HS 030 • NORTH ELEVATION



Ⓑ HS 030 • WEST ELEVATION



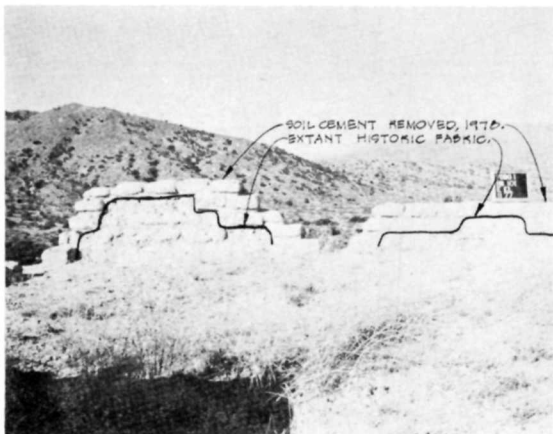
Ⓒ HS 030 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.



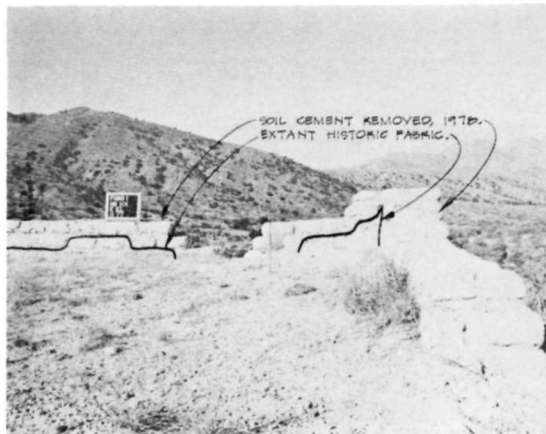
Ⓓ HS 030 • NORTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	
APRIL, 1978	
DATE	



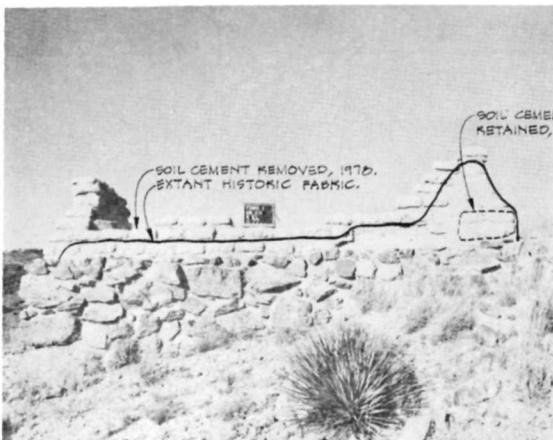
Ⓐ HS 101 • EAST ELEVATION



Ⓑ HS 101 • EAST ELEVATION



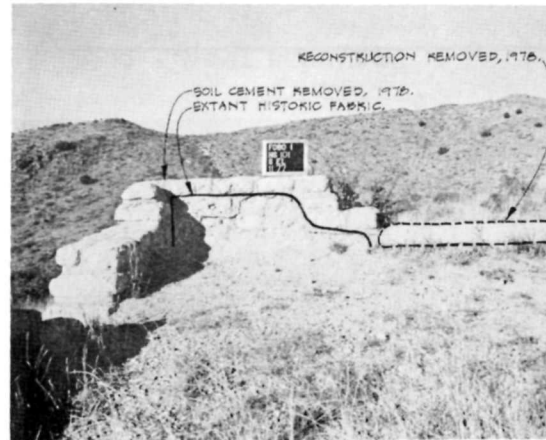
Ⓒ HS 101 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ



Ⓓ HS 101 • SOUTH ELEVATION



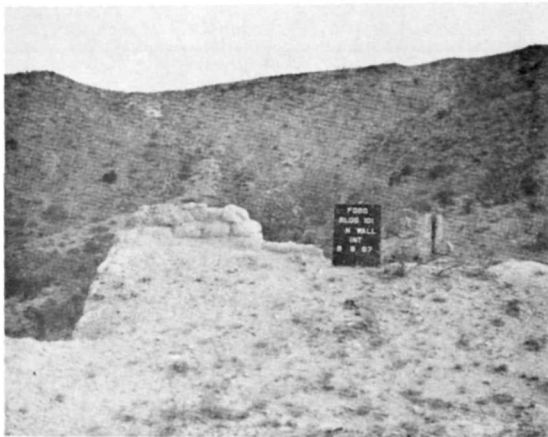
Ⓔ HS 101 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓓ



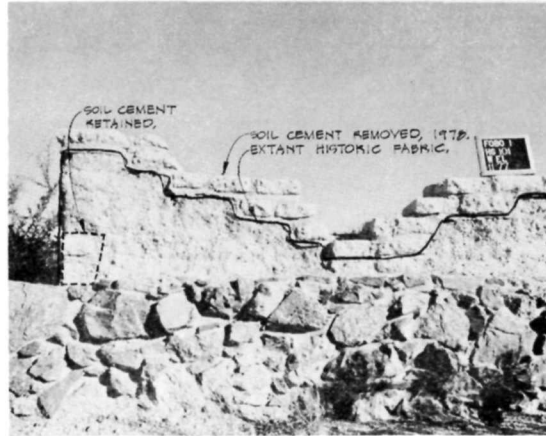
Ⓕ HS 101 • SOUTH ELEVATION

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

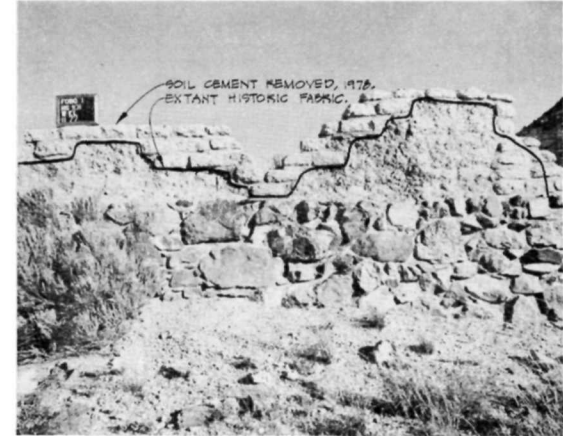
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	
CHECKED	SHEET
APRIL, 1978	11
DATE	OF 11



Ⓐ HS 101 • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ.



Ⓑ HS 101 • WEST ELEVATION



Ⓒ HS 101 • WEST ELEVATION



Ⓓ HS 101 • WEST ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ & Ⓑ.



Ⓔ HS 101 • NORTH ELEVATION



Ⓕ HS 101 • NORTH ELEVATION
BEFORE 1967 STABILIZATION,
SAME VIEW AS Ⓐ.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
102	92
CHECKED	DATE
APRIL, 1978	11



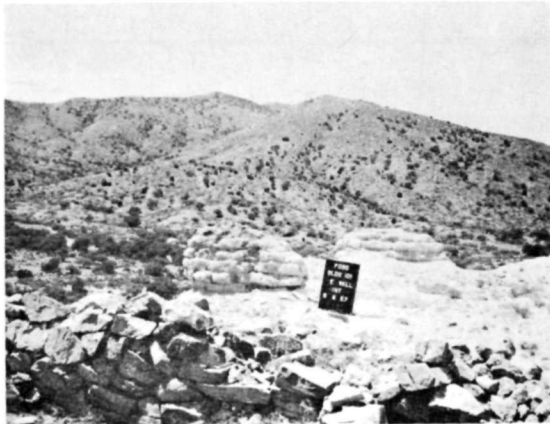
Ⓐ HS 101 • WEST ELEVATION



Ⓑ HS 101 • WEST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ



Ⓒ HS 101 • EAST ELEVATION



Ⓓ HS 101 • EAST ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓒ

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	SHEET
CHECKED	13
APRIL, 1978	47
DATE	



Ⓐ HS 106 • WALL A • SOUTH ELEVATION



Ⓑ HS 106 • WALL B • SOUTH ELEVATION



Ⓒ HS 106 • WALLS A & B • SOUTH ELEVATION
BEFORE 1967 STABILIZATION.
SAME VIEW AS Ⓐ & Ⓑ.



Ⓓ HS 106 • WALL C • NORTH ELEVATION



Ⓔ HS 106 • WALL A • WEST ELEVATION



Ⓕ HS 106 • WALL B • NORTH ELEVATION

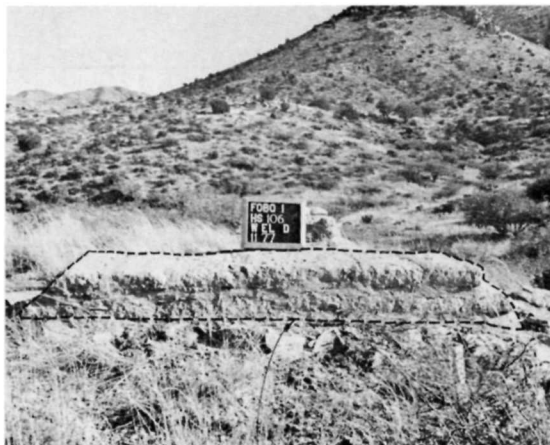
STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED ROBBINS DRAWN	DRAWING NO. 424 25000
CHECKED APRIL 1978 DATE	SHEET 94 OF 17

SOIL CEMENT REMOVED, 1970.
EXTANT HISTORIC MASONRY.



Ⓐ HS 106 • WALL C • WEST ELEVATION



RECONSTRUCTION REMOVED, 1970.

Ⓑ HS 106 • WALL D • WEST ELEVATION

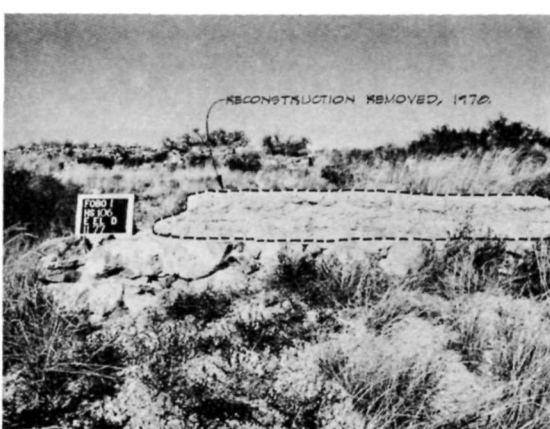


Ⓒ HS 106 • WALLS C & D • WEST ELEVATION
BEFORE 1967 STABILIZATION.



SOIL CEMENT REMOVED, 1970.
EXTANT HISTORIC MASONRY.

Ⓓ HS 106 • WALL C • EAST ELEVATION



RECONSTRUCTION REMOVED, 1970.

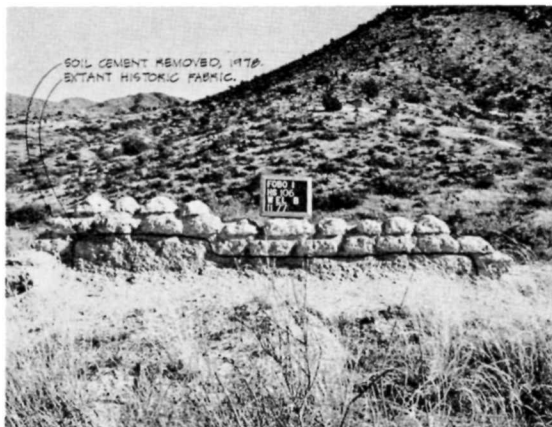
Ⓔ HS 106 • WALL D • EAST ELEVATION



Ⓕ HS 106 • WALLS B & C • EAST ELEV.
BEFORE 1967 STABILIZATION.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

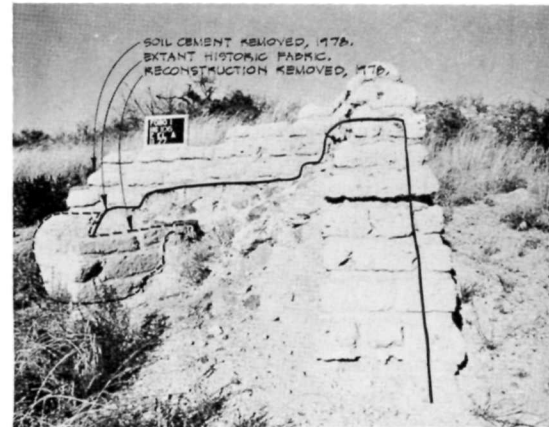
PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PCT SHEET
CHECKED	101
APRIL 1978	95
DATE	OF 97



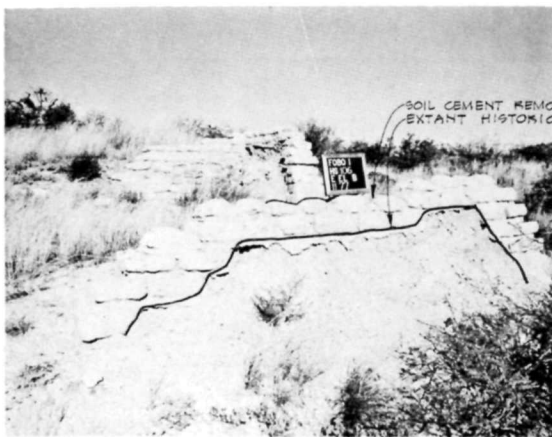
Ⓐ HS 106 • WALL B • WEST ELEVATION



Ⓑ HS 106 • WALLS B & A • NORTH ELEVATION
BEFORE 1967 STABILIZATION.



Ⓒ HS 106 • WALL A • EAST ELEVATION



Ⓓ HS 106 • WALL B • EAST ELEVATION



Ⓔ HS 106 • WALLS C & D • EAST ELEVATION
BEFORE 1967 STABILIZATION.

STABILIZATION OF ABOVE-GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DRAWING NO.
DESIGNED	424
ROBBINS	25,000
DRAWN	PIC/
	102
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APRIL, 1978	96
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① HS 100 * SOUTH ELEVATION

1977 * HISTORIC & NON-HISTORIC REMAINS
ARE UNDISTURBED SINCE EXCAVATION &
STABILIZATION IN 1967.



② HS 100 * SOUTH ELEVATION

1967 * SOIL CEMENT LAID ON BACKFILL OVER
HISTORIC FABRIC.

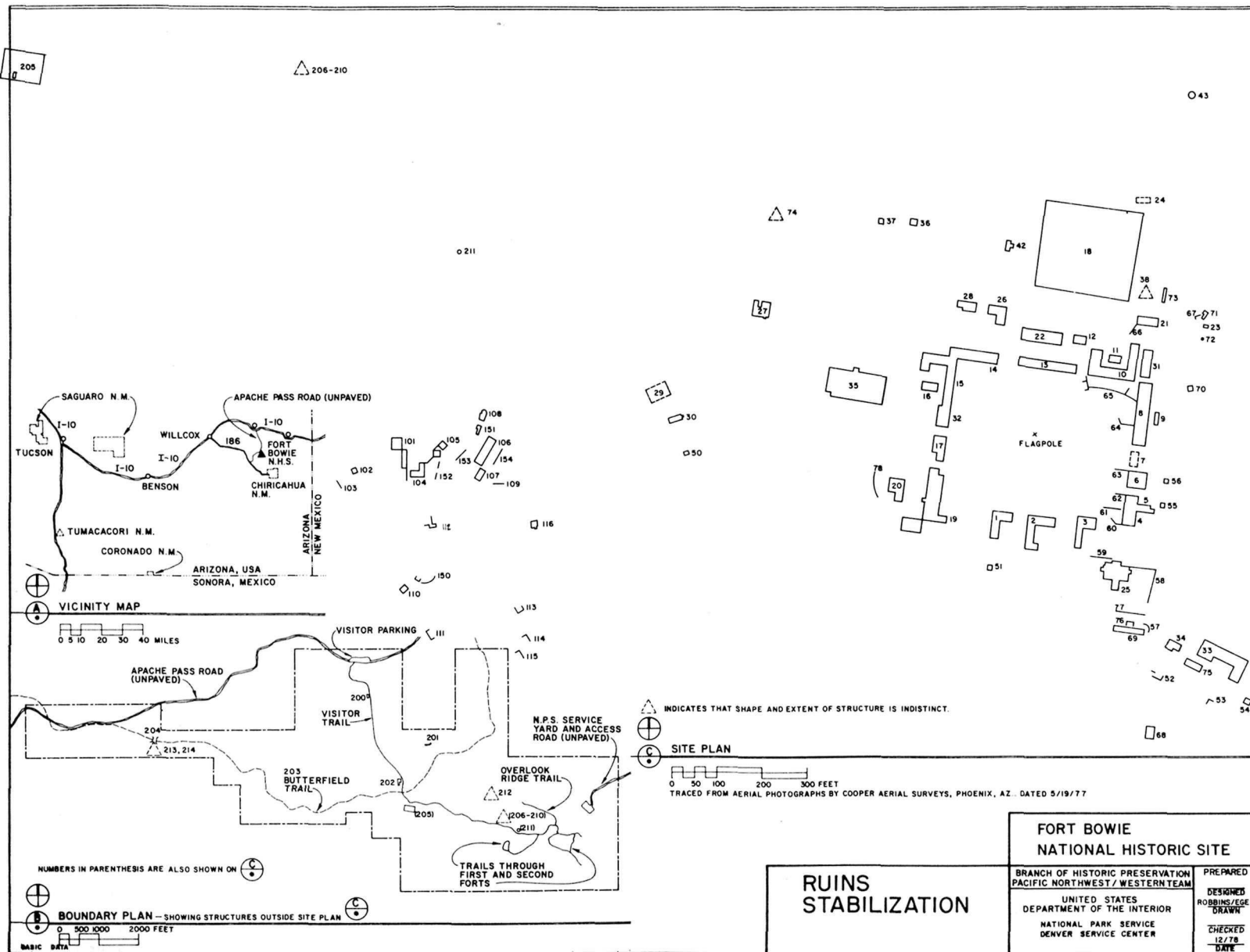


③ HS 100 * SOUTH ELEVATION

1967 * AFTER EXCAVATION TO EXPOSE
HISTORIC FABRIC.

STABILIZATION OF ABOVE - GRADE ADOBE RUINS
FORT BOWIE NATIONAL HISTORIC SITE

PREPARED	DESIGNED	DRAWING NO.
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DRAWN	DRAWN	25,000
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VICINITY MAP

AS SHOWN

FORT BOWIE NATIONAL HISTORIC SITE

BRANCH OF HISTORIC PRESERVATION
PACIFIC NORTHWEST/WESTERN TEAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

PREPARED
DESIGNED
ROBBINS/EGE
DRAWN

CHECKED
12/78
DATE

VICINITY SITE PLANS

LOCATION WITHIN PARK
PARK GENERAL
NAME OF PARK
FORT BOWIE NATIONAL HISTORIC SITE
WESTERN REGION COCHISE COUNTY ARIZONA STATE

DRAWING NO.
424
25,000

SHEET
1
OF 1

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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