Preservation/Restoration of Moton Field

Phase II

THE JAEGER COMPANY

Tuskegee Airmen
National Historic Site
Tuskegee, Alabama

Historic Structure Report
Fire Protection Shed

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Executive Summary

Tuskegee Institute (now Tuskegee University) was the only institution during World War II that provided primary military flight training for African-American pilot cadets in the United States Army Air Corps. Tuskegee Institute constructed Moton Field in Tuskegee, Macon County, Alabama, from 1941 to 1945 and used it as the principal facility of their contract primary flying school. The airfield was named for the second president of Tuskegee Institute, Robert Russa Moton. Most Tuskegee Airmen received their first military flight training at Moton Field.

The Tuskegee Airmen were the first African-American soldiers to complete their pilot training successfully and enter the Army Air Corps. Military leaders were at first hesitant to use the Tuskegee Airmen in combat. Eventually the airmen saw considerable action in Europe and North Africa. Their accomplishments in the air proved conclusively that African Americans could fly and maintain sophisticated combat aircraft and ultimately paved the way for full integration of the United States military.

The Southeast Regional Office of the National Park Service (NPS) prepared the *Moton Field/Tuskegee Airmen Special Resource Study* in October 1998 to evaluate the potential of adding Moton Field to the National Park System and to define the significance of the site with regard, specifically, to its association with the Tuskegee Airmen during World War II and, in general, to its role in the history of military aviation. The airfield complex at Moton Field was designated as the Tuskegee Airmen National Historic Site in November 1998 and was subsequently programmatically listed in the National Register of Historic Places.

This Historic Structure Report (HSR) has been prepared as part of Phase II of the Moton Field Preservation/Restoration project. Phase II includes the production of a Cultural Landscape Report (CLR) and fifteen Historic Structure Reports for nine extant structures and six non-existing structures. The CLR addresses the Moton Field site as a whole and contains the complete historic context for the site; each HSR contains an abbreviated historic context that focuses on building history. Following is a list of the fifteen structures for which HSRs have been prepared.[1]

EXTANT STRUCTURES

Hangar Number One
Skyway Club
Control Tower
Bath and Locker House
Warehouse/Vehicle Storage Building
Dope Storage Shed
Oil Storage Shed
Fire Protection Shed
Entrance Gate

NON-EXISTING STRUCTURES

Hangar Number Two
Cadet Class and Waiting Room
Army Supply Building
Physical Plant Warehouse
Vehicle Maintenance Shed
Guard Booth

A *Moton Field Structure Nomenclature* table clarifying the name of each structure for purposes of the CLR and HSRs follows the Executive Summary.

To prepare the Historic Structure Reports and the Cultural Landscape Report, research was done at a number of repositories and on site. Research included on-site field inspections; interviews of persons associated with the site before, during, and after the construction of Moton Field; and review of primary and secondary sources related to the social and physical history of Moton Field, including NPS files compiled during the preparation of the *Special Resource Study* and selected transcripts from the ongoing NPS Tuskegee Airmen Oral History Project. A list of repositories visited and the primary materials that were reviewed at each is located in the bibliography of the Cultural Landscape Report.

Major research findings resulting from the research phase of the project included the location of a number of primary sources yielding information about the construction and operation of Moton Field. This primary information included original architectural drawings and site plans for the airfield and its expansions throughout the war years; historic photographs of the airfield complex and the flight training activities that took place there; written histories chronicling the airfield's construction and day-to-day operations; information on the building contractor and landscape architect involved in the complex's design and construction; and the history of the site before and after its war-era use for primary flight training.

[1] The Phase II scope of work originally included a seventh non-existing structure, the Shed/Pump House, for which an HSR was to be prepared. After the research phase, however, no specific information had been found on the location or design of a shed/pump house on the Moton Field site. Because of this, the building was dropped from the list of non-existing structures.

The period of significance for the interpretation of Moton Field has been established as 1941 to 1945, the period during which Moton Field was constructed and the Tuskegee Airmen were trained by the contract primary flying school. 1945 will be the date of restoration for the field's extant buildings and site features; the date of reconstruction for Hangar Number Two, the only non-existing building at the field that will be re-created; and the date of interpretation for the remaining non-existing buildings and site features. 1945 is the date by which all the buildings and site features at the airfield that were associated with the flying school had been constructed.

Built in 1941, the Fire Protection Shed is an important auxiliary building at Moton Field. Based on historical research, a thorough investigation of the building and its relationship to the site as a whole, and the building's significance to the site's interpretation, the Ultimate Treatment and Use Recommendation for the Fire Protection Shed is **Restoration of the building's exterior and Preservation of the interior.** System requirements for restoration of the exterior and preservation of the interior will include a monitored security system. The Fire Protection Shed contributes to the surviving historic fabric at Moton Field, and its restoration will be a significant component in the interpretation of the airfield to the public.

MOTON FIELD STRUCTURE NOMENCLATURE

EXTANT STRUCTURES

***Use Structure Name in Bold Italics*

Original Name[1]	Common/Later Name	NPS Name
Hangar Number One		
Civilian Recreation Bldg.	*Skyway Club*	All Ranks Club
Control Tower		
Bath and Locker House Mechanics' Bath & Locker Bldg.		Administration/Locker Bldg.
Warehouse, Maintenance Bldg., Vehicle Storage		*Warehouse/Vehicle Storage Bldg.*
Dope Storage		*Dope Storage Shed*
Oil House		*Oil Storage Shed*
Fire Protection		*Fire Protection Shed*
Entrance Gate		Entrance Gate

NON-EXISTING STRUCTURES

Original Name	Common/Later Name	NPS Name
Hangar Number Two		
Cadet Class & Waiting Room (Cadet Waiting House)	Flight Command Office	Flight Command Office
Supply Building	Army Supply Building	*Army Supply Building*
Physical Plant Warehouse		Physical Plant Storage
Vehicle & Maintenance Shed		*Vehicle Maintenance Shed*
Guard House		*Guard Booth*

[1] Based on architectural drawings, written histories, or other original documentation.

Administrative Data

Locational Data

Building Name: Fire Protection Shed
Building Location: Moton Field, Tuskegee Airmen National Historic Site, Tuskegee, Macon County, Alabama.

Real Property Information

Acquisition Date: November 1998
Total Improvement/Modification Costs to Date: $810,855 (total construction cost to date for stabilization at Moton Field)

Size Information

Total Floor Area: 54 SF
First Floor Area: 54 SF
Basement Area: n/a
Roof Area: 88 SF
Perimeter Length: 29 feet
Number of Stories: One (1)
Number of Rooms: 1
Number of Bathrooms: 0

Building Code Information

Applicable Codes:
Building /Dwelling Code: 1997 Standard Building Code
Structural Code: 1997 Standard Building Code
Plumbing Code: 1997 Standard Plumbing Code
Mechanical Code: 1997 Standard Mechanical Code
Electrical Code: 1996 National Electric Code
Fire/Life Safety: 1994 Standard Fire Protection Code, 1997 NFPA 101

Seismic Hazard Exposure Group 8- No seismic requirements for architectural, mechanical and electrical systems. There are some minor structural requirements.

Analysis of the Fire Protection Shed is based on possible usage as an unoccupied storage facility.
Building area is approximately 52 sf.

1997 Standard Building Code
Storage Occupancy - Group S1 - Moderate Hazard
Construction Type VI unprotected
Not fire sprinklered

Maximum allowable building height is 40'.
One story is allowed
Maximum allowable area is 6000 sf

The facility will be able to meet the area and height requirements.

NFPA 101
Storage Occupancy - Group S

Proposed Treatment

Proposed Treatment for the Fire Protection Shed: Restoration of the exterior and Preservation of the interior

Related Studies

Moton Field/Tuskegee Airmen Special Resource Study, National Park Service, Southeast Regional Office, Atlanta, Georgia, 1998.

Cultural Resource Data

The Fire Protection Shed is a contributing resource in the Moton Field complex which was programmatically listed in the National Register of Historic Places as a historic site unit of the National Park Service on November 6, 1998 with the approval by President Bill Clinton of Public Law 105-355 which established the Tuskegee Airmen National Historic Site.

The period of significance for Moton Field has been established as 1941 – 1945, the period during which Moton Field was constructed and served as the principal facility of the primary flying school for the training of the Tuskegee Airmen.

Moton Field is nationally significant for its association with the historic contexts of African-American History and Military/Aviation History. In both African-American and Military/Aviation history, the airfield complex is significant for its role as the only primary flight training facility for African-American pilot cadets in the Army Air Corps during the World War II era. The accomplishments of the Tuskegee Airmen in military air combat in both European and North African theaters of operation helped pave the way for the full integration of the United States military and future civil rights advancements.

Recommendations for Documentation, Cataloging, and Storage of HSR Materials

A copy of research materials specifically documenting the Fire Protection Shed is located within the body or in *Appendix A* of this HSR. A copy of research materials documenting Moton Field as a whole may be found with the Cultural Landscape Report. Pre-stabilization photographs and other photographs taken during and after stabilization work of the Moton Field structures and site will remain with the project architectural firm until the completion of final construction drawings and specifications required for the preservation/restoration work.

Part I – Developmental History

Historical Background & Context

Chronology of Development & Use

Physical Description

Historical Background & Context

Formally approved as Tuskegee Airmen National Historic Site on November 6, 1998, Moton Field is of national importance for its association with the training of the Tuskegee Airmen during World War II. Moton Field, constructed between June 1941 and March 1945, was the only primary military flight training facility for African-American pilot candidates in the United States Army Air Corps during the war. The field, named in honor of Robert Russa Moton, the second president of Tuskegee Institute (now known as Tuskegee University), symbolizes the entrance of African-American pilots into the Army Air Corps under a policy of segregation that was mandated by the military and institutionalized in the South. The buildings that remain at Moton Field have changed little over the years and the historic setting of the 1940s is still discernible.

Context

Opportunities for African-American participation in the United States military were always limited and controversial. Quotas, exclusion, and discrimination based on race reinforced the prevailing attitude in both the military and the general public that African Americans did not possess the intelligence or ability to be successful in the military. This perception carried into the 1940s when military officials still believed that African Americans could not become successful pilots in the Army Air Corps. The Air Corps decided to train a small number of African-American pilot candidates under segregated conditions and in January 1941, chose Tuskegee Institute as a civilian contractor to operate a primary flying school at a location in Tuskegee, Alabama, that would become known as Moton Field. This was the only primary military flight training facility for African-American pilot candidates in the U.S. Army Air

Corps during World War II. The facility symbolizes the entrance of African-American pilots into the Air Corps, although on a segregated basis.

War-Era Construction at Moton Field

Building construction at Moton Field can be divided into three major phases of construction. These construction phases are modern descriptive terms and are not historic nomenclature. The justification for the three phases is based on actual dates of construction as well as the source of funding for each. The primary flying field was not officially known as Moton Field until its dedication in April 1943.

Phase One, beginning in June of 1941 and lasting through December of that same year, consisted of the initial establishment of the airfield (grading and clearing) as well as the construction of Hangar Number One and the Fire Protection Shed. Tuskegee Institute contributed $20,000, but the major funding source was a $130,000 loan from the Julius Rosenwald Fund.

Phase Two began in the summer of 1942 and lasted almost a year. Tuskegee Institute's Board of Trustees initially authorized $15,000 for construction of the Cadet Class and Waiting Room and the Army Supply Building.[2] Hangar Number Two and the Control Tower, the Bath and Locker House, several small sheds for oil and dope storage, and an addition to Hangar Number One were completed with a $150,000 loan from the institute's general funds.[3]

Phase Three began in early spring of 1944 and extended through the summer of the following year. It is believed that Tuskegee Institute funded this third phase of construction as well, but documentation has not been located to support or disprove this. During this phase the Vehicle Maintenance Shed and the Physical Plant Warehouse were constructed and the enlargement of the asphalt parking mat and paving of roadways in the building area were completed. The ground was graded south of Hangar Number One for a civilian recreation building, later known as the Skyway Club, that was not started until 1945.

Phase One Construction (June-December 1941)

Following the final contract negotiations with the Julius Rosenwald Fund, the United States Army, and Samuel Mizel (S.M.) Eich, the owner of the farm land on which the primary flying field would be built, construction of the airfield got underway in the early summer of 1941. "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama" states that the contract was signed on June 6, 1941 and construction of the airfield started about the same time.[4] Archie A. Alexander, a prominent African-American contractor from Iowa, was recruited to supervise the initial phase of airfield construction.

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[2] Julius Rosenwald Fund (JRF) Box 359, Folder 5. General Correspondence.
[3] JRF Box 359, Folder 5. General Correspondence.
[4] "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section I," p.1.

By the end of 1941 the first phase of construction was complete. Hangar Number One was constructed for $44,134, which was included in the total cost of $148,506.98. The final construction costs were as follows:

Payment in full of contract	$112,900.00
Extra work by contractors	1,389.50
Purchase of land	33,500.00
Cutting trees	500.00
Allowances for crop damages	217.48
	$148,506.98[5]

Phase Two Construction (June 1942-May 1943)

The Tuskegee training program expanded per orders of the Army, and the facilities originally constructed for a smaller number of cadets soon became inadequate. By the end of May 1942 plans were underway to construct one new supply building and one cadet waiting house. Hangar space formerly used for supply was converted to a link trainer room and empty office space was nonexistent at the field.[6] The Tuskegee Institute Board of Trustees authorized special expenditures of $15,000 to finance these improvements, which were completed by late July 1942.

That fall, when it became necessary to expand the facilities at the field again because of another increased quota of students per class, financing once again was an issue. A request to the Julius Rosenwald Fund for an additional loan was rejected. In addition, they offered no leniency for loan repayment should Tuskegee be able to secure a loan from another source. Ultimately, $150,000 was secured through a loan from the general funds of Tuskegee Institute to complete the second phase of construction.

In addition to the expansion work completed by July 1942, the following construction was completed during Phase Two. Hangar Number Two was built with lean-to space for a Cadet Ready Room, five link trainers, and space for parachute maintenance, issue, storage, and drying. The Control Tower, a pump house containing chlorination units, the Dope Storage Shed, the Oil Storage Shed, and Bath and Locker House were also part of this phase.[7] Women began to apprentice as mechanics, due to the manpower shortage during the War that necessitated separate facilities for men and women. Although initial construction had failed to anticipate women workers at the primary flying field, toilet and locker facilities were incorporated into the plans of the Bath and Locker House to remedy the need for women's facilities.[8]

A School Facilities and Civilian Personnel Report dated October 27, 1942 details the status of the construction project with Hangar Number Two including the Control Tower at 7%

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[5] JRF Box 359, Folder 5. General Correspondence.
[6] "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section II," p. 4.
[7] Ibid, p. 5.
[8] George L. Washington, *The History of Military and Civilian Pilot Training of Negroes at Tuskegee, Alabama, 1939-1945* (Washington, D.C.: George L. Washington, 1972), pp. 306-307; 310-311.

complete; the Bath and Locker House at 25%; and the Oil Storage Shed at 90% complete. Progress to date on the main field was 20% complete.[9]

During construction it became difficult to obtain some building materials due to the shortage caused by the war. Even with a high priority rating obtained from the Air Force, locating materials often lengthened construction time. This was especially true with regard to the 100-foot span trusses and metal truss ties for Hangar Number Two. Ultimately, David A. Williston, the Landscape Architect at Tuskegee Institute who was responsible for the landscape design at the primary flying field, scoured the campus for suitable trees for cutting and milling the trusses. Construction on the hangar came to a virtual stopping point for two months until truss ties could be located.[10]

On November 10, 1942, 35% progress was reported on the main field. Construction on the Oil Storage Shed was complete and Hangar Number Two had reached 35% completion while the Bath and Locker House was 60% complete.[11] By November 25, the Hangar progressed to 60% completion and the Bath and Locker House to 75% complete.[12]

In December construction began on the Warehouse/Vehicle Storage Building and a Vehicle Maintenance Shed. The shed, which was located at the east extremity of the building complex, housed trucks and ambulances overnight as well as miscellaneous lumber used for maintenance. The warehouse was a concrete block building located east of where the Physical Plant Warehouse was soon completed.[13] The December 10, 1942 report boosted the Hangar to 70% completion, the Bath and Locker House to 80%, and the Warehouse/Vehicle Storage Building was 20% complete. Although the main field had been in use over a year, it was only 45% completed as of this report.[14]

Despite being only 95% complete in March 1943, offices in Hangar Number Two were occupied in order to relieve office congestion in Hangar Number One. May 1943 marked the completion of the second building phase at the airfield. The Bath and Locker House, Warehouse/Vehicle Storage Building, improvements to the landing field and Hangar Number Two were finished. At this time the Intelligence Office was moved from Hangar Number One to Hangar Number Two, which allowed space for the Intelligence Library. As the Cadet Ready Room was also moved to the second hangar, it allowed trainees free access to the reading materials. The Intelligence Office was a military office that provided secure as well as general information about war activities. The office included an Intelligence Library with reading materials such as magazines, newspapers and intelligence summaries, and a War Room with additional reading materials, models of aircraft, ships, and tanks, and maps of various theaters of operations, all of which were kept updated as the war progressed.

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9 "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section II," Appendix III.
10 Washington, pp. 301-303.
11 "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section II," Appendix IV.
12 Ibid, Appendix V.
13 Washington, p. 312.
14 "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section II," Appendix VI.

Aviation cadets were encouraged to spend a few minutes each day in the Library and War Room to keep themselves informed. The Parachute and Link Trainer Departments also moved into larger spaces in Hangar Number Two. This left more space in Hangar Number One for Engineering and Operations.[15]

The airfield was named Moton Field in honor of Tuskegee Institute's second president Robert Russa Moton. In preparation for the official dedication ceremony on April 4, 1943, a brick entrance gate was constructed along the main road to the west of the building complex. The south wall contained a niche that featured a bust of Robert Moton.[16]

In July of 1943, Tuskegee Institute made its final payment on the loan to the Julius Rosenwald Fund. Tuskegee Institute president Dr. Frederick D. Patterson summed up this special partnership with the following words:

> I think it is safe to say that were it not for the wisdom and generosity of the Rosenwald Fund, in its willingness to make an exception to its stated policy, this favorable accomplishment probably would not be a matter of record today. I am sure also that the action of the Rosenwald Fund encouraged our own trustees to take the larger portion of our free funds to make possible the expansion and promotion of this development. We now have a total investment of approximately $350,000, and aviation has been developed to the point where I am sure it will be a permanent feature of the work of Tuskegee Institute. When we consider the importance of aviation as a vocation today and what it will in all probability mean in the post-war world, we can see that a contribution of lasting importance has been made.[17]

Phase Three Construction (Spring 1944-Summer 1945)

During the first half of 1944, Moton Field experienced yet another program expansion. In March a new Physical Plant Warehouse was completed, which provided additional office and storage space used by the primary flying school contractor, Tuskegee Institute, to better oversee activities at the airfield.[18]

A year later construction finally got underway on the civilian recreation building, later known as the Skyway Club. This building was to serve as a recreational facility for employees who worked at Moton Field. Built as a cooperative project, Tuskegee Institute supplied the materials while the employees were expected to contribute most of the labor. "Solo," a locally distributed newsletter at Moton Field, suggested that an appropriate motto for the new building project was, "[t]he harder we work, the sooner we get to play."[19]

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[15] "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section III," pp. 1-2; "History of the 2164th AAF Base Unit (CPS.P)(Formerly 66th AAFFTD), Tuskegee Institute, Alabama: Section IV," p. 39; *Solo.* 10 March 1945, p. 9.
[16] Washington, p. 310.
[17] JRF Box 359, Folder 5. General Correspondence.
[18] "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section IV," p. 1.
[19] *Solo.* 10 March 1945, p. 9.

The final installment of the History of the 2164th AAF Base Unit, Tuskegee Institute, Alabama covered September through November 1945. This period marked the final phase of primary flying training of African-American personnel at Moton Field. By the end of November all trainees had either graduated, been discharged, or transferred to Tuskegee Army Air Field.[20]

Post War (1946-1998)

The close of the Army Air Corps contract flying school in November 1945 brought a change in the activity at Moton Field. Charles Alfred "Chief" Anderson, who was a flight instructor at the field for the Army Air Corps, continued to offer private flying lessons from Moton Field. Even though primary flight training operations had ceased at the airfield, the Skyway Club continued to operate as a night club open to the general public during this time. According to Bill Childs, who worked as a mechanic at Moton Field, a private business, Tuskegee Aviation Corporation, formed soon after the end of primary flight training. This corporation used the Moton Field facilities to repair and maintain planes and convert military planes for civilian use. In addition, the corporation operated a G. I. flight school through the G. I. College Bill, and Tuskegee Institute offered a degree in Aircraft Mechanics using the corporation and Moton Field for training. The corporation operated for approximately two years after the war ended.[21] According to Mr. Childs, the City of Tuskegee attempted to levy Tuskegee Aviation Corporation for a total of four million dollars in taxes, the amount for which the Moton Field property was insured. Rather than pay the taxes, the corporation decided to shut down. The government's first attempt to tax Tuskegee Institute for the property failed because the school was tax exempt and refused to pay the taxes.[22]

After the corporation dissolved, Macon County used the hangars for storage of surplus food and as a distribution center for welfare recipients.[23] During this time, several of the support buildings were turned into housing for employees of Tuskegee Institute. The bare minimum was spent on upkeep of these "cottages" as they were known, and residents did general repairs on the buildings themselves. Bill Childs remembers the Skyway Club serving as a dormitory for male students shortly after the war. The G. I. Bill increased student enrollment, and, while campus dorms were being renovated, the Skyway Club's original open space was subdivided into smaller sleeping quarters. The building may have been in use as a dormitory until the early 1950s.[24]

All activity, with the exception of housing Tuskegee Institute employees in the cottages, ceased by the mid-1950s, and Tuskegee Institute put little money into the maintenance and upkeep of the buildings and grounds at Moton Field. According to Ed Pryce, landscape architect and superintendent of grounds and maintenance from 1955-1969, the only official upkeep at the field was occasional mowing and maintaining the water and sewer lines. No

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[20] "The History of the 66th AAF Flying Training Detachment, Moton Field, Tuskegee Institute, Alabama: Section XII," p. 2.
[21] Telephone Interview with Bill Childs by Debbie Curtis Toole, December 2001.
[22] Ibid.
[23] Ibid.
[24] Ibid.

official use was given to the hangars or sheds during this time. With this lack of maintenance, the buildings and landscape deteriorated.

In the 1960s, the Tuskegee Institute School of Veterinary Medicine began to use the airfield for animal research. The area to the east of the field's building complex contained numerous cattle pens. The school renovated Hangar Number Two into a large animal operating and research lab in the early 1970s, which involved subdividing the large hangar space into operating rooms while the original office and classroom areas were converted into laboratories.[25] A fire destroyed the hangar in 1989, and the remaining walls were leveled to the ground. Based on a 1964 floor plan of the Skyway Club, this building may also have been used by the Veterinary School. In the mid-1970s, the school renovated the Warehouse/ Vehicle Storage Building into a Swine Research Center.

In 1972, a tract consisting of 325 acres of the original Moton Field was deeded to the City of Tuskegee for development of a municipal airport. Bids for the contract were opened in April of 1972, and construction began a year later by the Dubose Construction Corporation in March of 1973. The Municipal Airport was constructed to the north of the building complex. The new paved runways occupy the southern portion of cleared land where the original grass runways were located.

Creation of Tuskegee Airmen National Historic Site

President Bill Clinton approved Public Law 105-355 on November 6, 1998, which established the Tuskegee Airmen National Historic Site at Moton Field in Tuskegee, Alabama. The site was created to commemorate and interpret the heroic actions of the Tuskegee Airmen during World War II and was established as a unit of the National Park System. With this approval, Moton Field was also programmatically listed in the National Register of Historic Places. Establishment of the site included the acquisition by the National Park Service from Tuskegee University of approximately forty-four acres known as Moton Field.[26] This forty-four acre tract includes the nine extant historic structures as well as the former sites of the six non-existing structures. In addition, the tract includes an overlook area that might eventually be the site of a proposed interpretative center. NPS land does not include the grass runways, a portion of the historic taxiway, or a portion of the historic tarmac.

Because of its creation as a contract school, Moton Field facilities have not faced the adaptation or conversion typically experienced by other World War II pilot training facilities. Although deterioration has occurred to the historic fabric, the surviving buildings have not undergone significant alterations. When considered in the larger historic setting, the buildings and surviving landscape features express the field's historic function as a flight training facility. Moton Field retains a high level of integrity for interpretation of the training and activities of the Tuskegee Airmen.

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[25] Interview with Booker Conley by The Jaeger Company, September 26, 2001.
[26] Public Law 105-335. 112 Stat. 3254-3258.

For a complete historical overview and developmental history of Moton Field see the Cultural Landscape Report (CLR) for Moton Field, Tuskegee, Alabama.

Chronology of Development & Use

The Fire Protection Shed is a small brick building located to the west of Hangar Number One. A concrete sidewalk leads up to the entrance and historic curbing is located slightly north.

Part of the initial phase of construction at Moton Field, the building was completed by December 1941. An aerial photograph taken in December 1941 indicates the presence of something behind Hangar Number One in the current location of the Fire Protection Shed; however, due to the poor clarity of the photograph and the distance from which it was taken, a positive identification of the building is not possible. G. L. Washington, director of pilot training programs and head of the Department of Mechanical Industries at Tuskegee Institute, and Archie Alexander, initial contractor for the airfield, were responsible for the initial design and layout of the field. These men would have designed the Fire Protection Shed.

The Fire Protection Shed originally stored other items used at the airfield. On an unlabeled site plan drawn by George A. Reed and dated May 14, 1942, the structure is labeled "Dope House".[27] (See *Figure 1.*) Dope, the coating applied to the fabric of an aircraft to produce tautness and increase the strength of the fabric, must have been stored in the shed at this time.

It appears that the structure may have changed storage functions shortly after May of 1942. An undated site plan drawn by H. H. Cooper labels the structure "Oil House". (See *Figure 2.*)

[27] Unnamed Site Plan drawn by George A. Reed. May 14, 1942. Tuskegee Physical Plant.

This plan shows the Cadet Class & Waiting Room and Army Supply Building and was drawn to propose parking arrangements at the airfield. It shows a parking area to the west of the buildings. Because these two buildings were constructed in the summer of 1942, this plan should be dated at the earliest to that same time.[28]

In 1943 the building changed functions again and was labeled as a Fire Protection Shed according to site plans from this time.[29](See *Figure 3.*) By 1943 two other sheds had been constructed at the airfield to house dope and oil which most likely contributed to the change in this shed to store fire protection related items.

Documentation about the fire protection system comes mainly from historic site plans and interviews with people associated with the complex after the end of primary flying training. The system evolved to accommodate new buildings as the airfield grew in size. Initially water for the airfield was pumped from the cistern next to Hangar Number One, which could have been used for fire protection.

By 1943 when the shed was labeled as the Fire Protection Shed, a small pond and pump house had been constructed adjacent to the Skyway Club. Underground hoses pumped water from the pond to buildings at the complex. Hangar Number Two was constructed with an interior fire protection system. Historic photographs of a fire that occurred in the Bath and Locker House sometime between 1943 and 1945 show water being pumped through hoses from what appears to be the same pond. Several fire hose reels located along the hill on the south side of Chief Anderson Drive and to the west of the Oil Storage Shed were part of this system as well. This system continued to be used at least until the 1960s as Dru Simpson, a Tuskegee Institute employee who lived in one of the cottages at Moton Field, was responsible for turning on the pumping system every few days to make sure that it functioned properly.[30]

A historic photograph from 1944 shows the building in the background. This picture shows the original door to the shed as a five-paneled wood door.[31] (See *Figure 4.*) It is not known specifically what function the fire protection shed had as part of the fire protection system. Nor is it known what sort if items were housed inside the shed.

After flying operations at the field ceased in November 1945, Tuskegee Institute did not officially use the Fire Protection Shed and spent little money on maintaining all buildings at Moton Field after the war.[32] The Fire Protection Shed, like other buildings at Moton Field, deteriorated over time because of this lack of general maintenance. The Tuskegee Institute School of Veterinary Medicine began to use some of the buildings at Moton Field in the 1960s but the Fire Protection Shed was not among them.[33] (See *Figure 5.*)

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28 "Proposed General Layout of Areas and Parking Spaces for Tuskegee Institute Primary Flying School." No date.
29 "Plot Plan 66th AAF Primary Flying Field, Tuskegee Institute, Ala." No date.
30 Interview with Dru Simpson, December 5, 2001. The Jaeger Company.
31 "Permanent Party Personnel Ready for Inspection." *Station History 2164th AAF Base Unit, CPS, P, Tuskegee Institute, Alabama.* February 1-December 31, 1944. AFHRA, Maxwell AFB Collection.
32 Interview with Booker Conley, September 26, 2001. The Jaeger Company.
33 Ibid.

By the summer of 2001, the building no longer had a door or door frame and the shed roof was in poor condition. The recent stabilization effort has replaced the entire wood roof system largely with in-kind materials; this new roof has not been permanently attached to the brick structure. The fascia board has been primed but not painted. New rolled asphalt roofing has been installed as well. In addition, a temporary pressure treated door frame has been installed; a vented plywood sheet has been placed over the door opening to weatherproof and secure the building. (See *Figure 6.*)

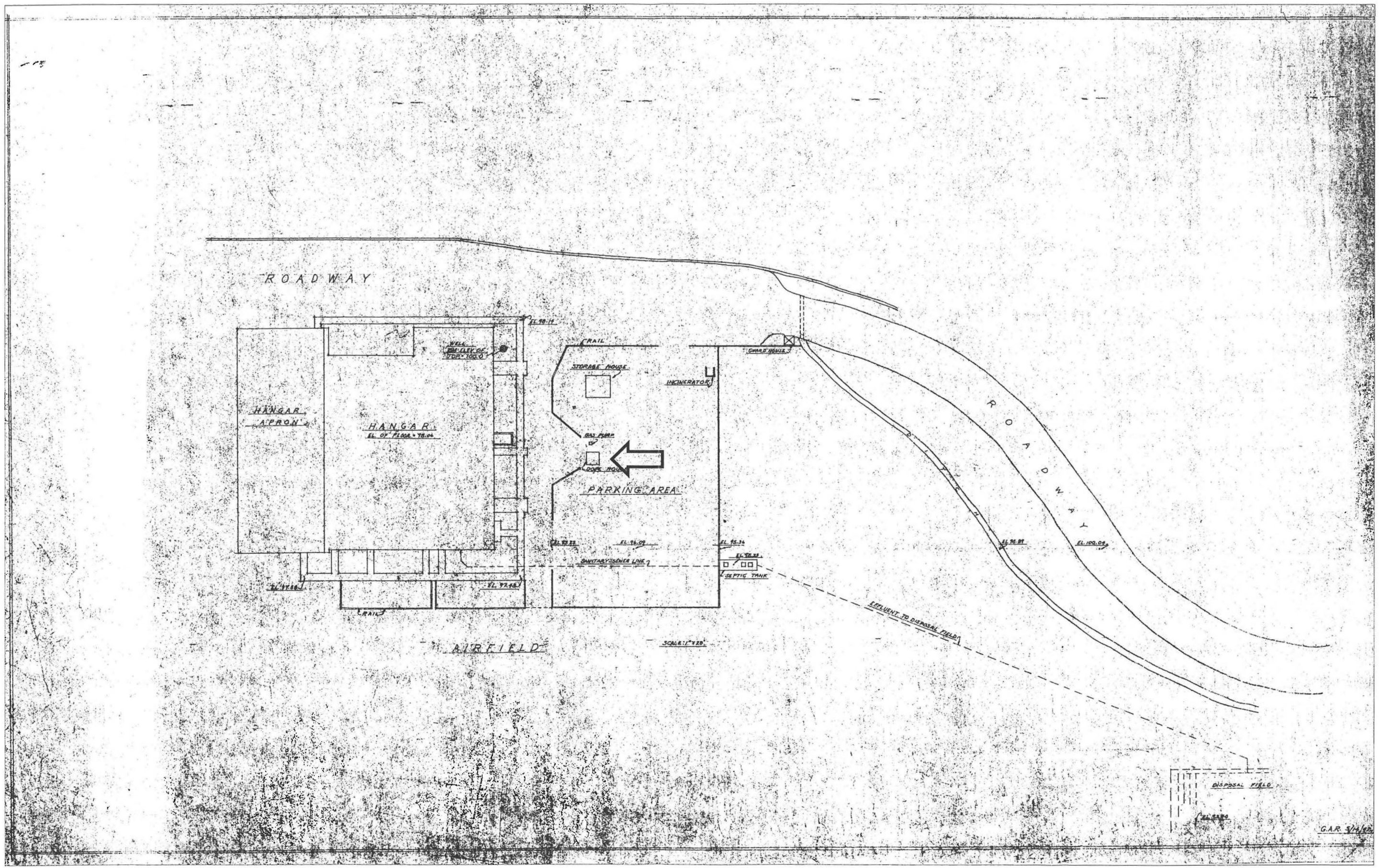

Figure 1: Site Plan drawn by George A. Reed and dated May 14, 1942 of Moton Field showing the structure as Dope Storage. Physical Plant, Tuskegee University.

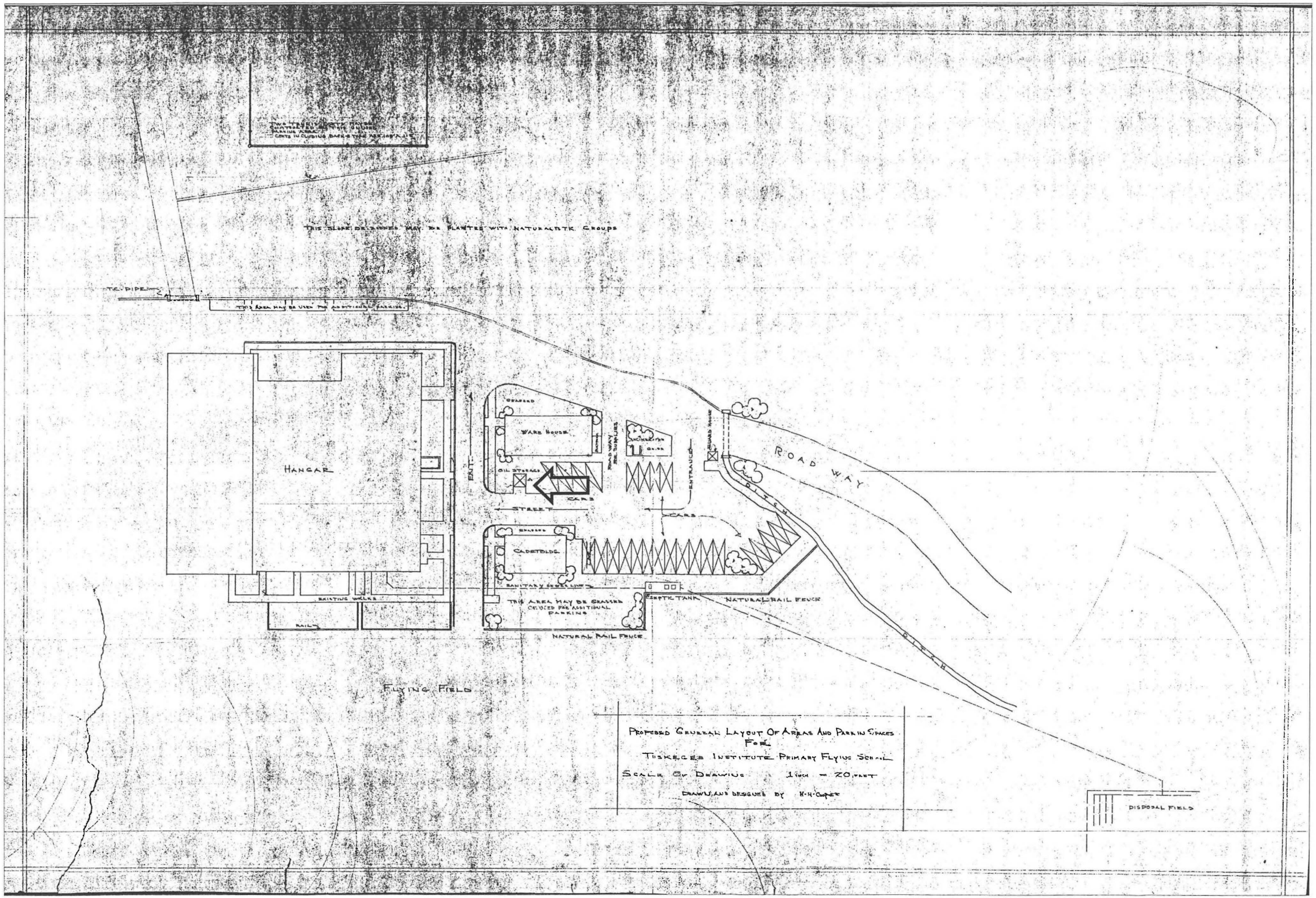

Figure 2: Site Plan drawn by H.H. Cooper dated circa Fall of 1942 with the structure labeled Oil Storage. Physical Plant, Tuskegee University.

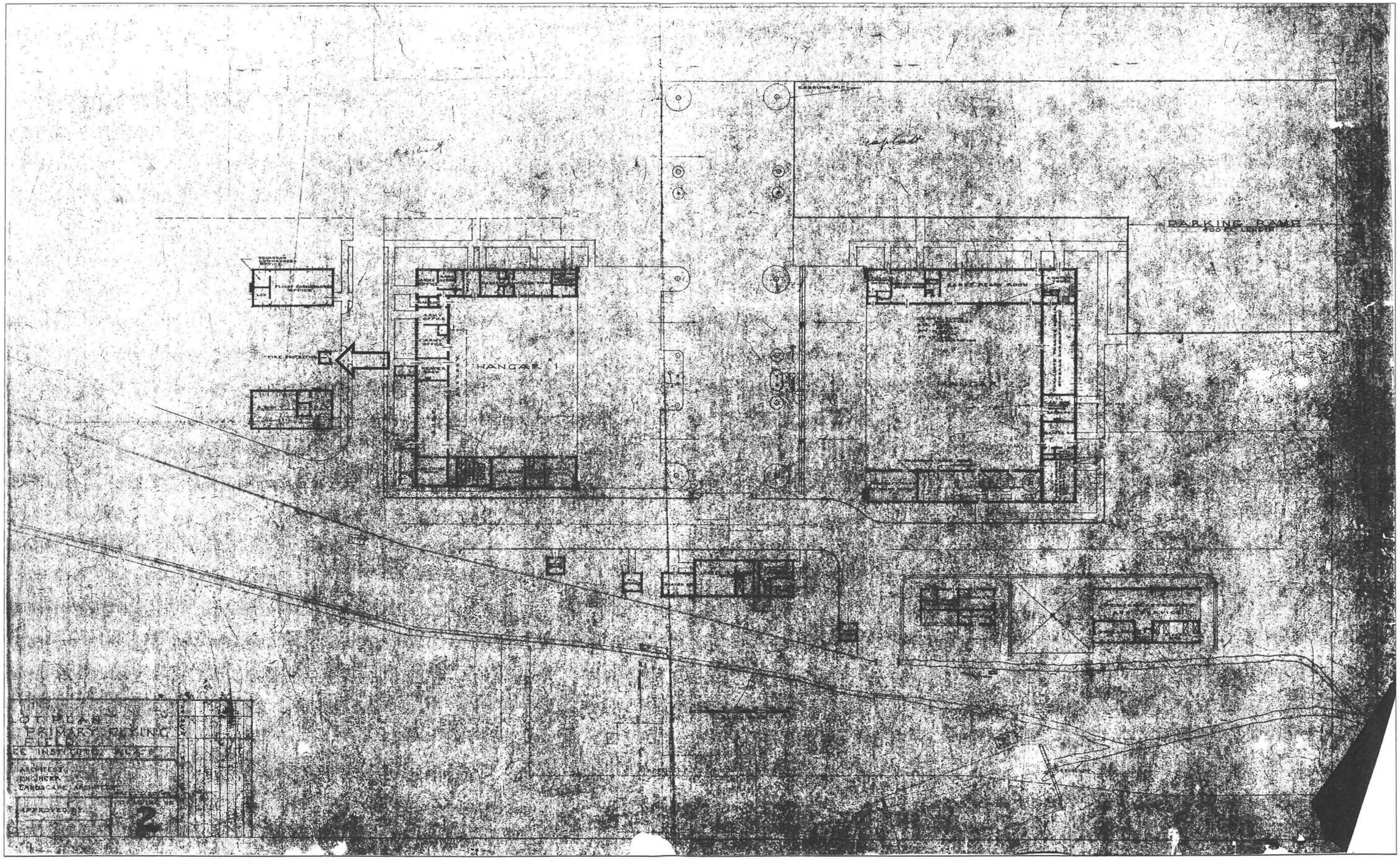

Figure 3: January 1943 site plan that shows the location of the Fire Protection Shed.
Physical Plant, Tuskegee University.

Figure 4: Historic photo with the Fire Protection Shed in the left background. AFHRA, Maxwell AFB.

Figure 5: Fire Protection Shed in 1997 prior to stabilization. National Park Service, SERO, Atlanta, Georgia.

Figure 6: East elevation of the Fire Protection Shed in the fall of 2001 after stabilization.

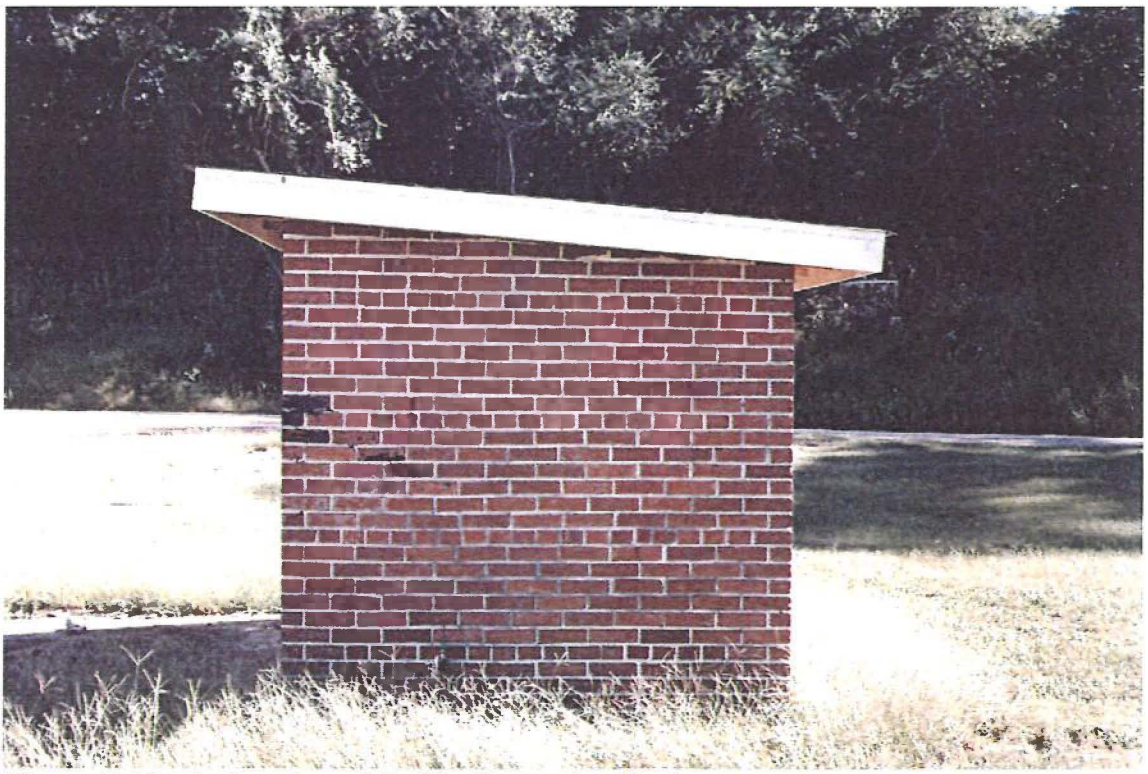

Figure 7: North elevation of the Fire Protection Shed.

Figure 8: Interior of the Fire Protection Shed.

Physical Description

The Fire Protection Shed is a single-room, brick structure that measures seven feet, one-half inch by seven feet, eight and one-quarter inch. It is located to the west of Hangar Number One.

Following is a detailed description of features and materials of the Fire Protection Shed based on field inspection and supported by original site plans and historic photographs. A *Conditions Assessment/ Features Inventory* detailing the conditions of each of the following features is located in *Appendix C.* A detailed *Paint Analysis* and *Mortar Analysis* are located in *Appendix D.*

[See *Figures 7 – 8* for current photographs of the Fire Protection Building.]

Walls

The walls of the Fire Protection Shed are solid, one-foot thick brick masonry. The brick is unpainted on both the exterior and the interior and laid in a common bond pattern of one header row and six stretcher rows. The top rows of brick were cut in a manner that made the east elevation at six feet, eight inches six inches taller than the west elevation at six feet, two inches high. The shed roof, which was tied into the top brick course, slopes towards the west.

Door

The entrance to the shed is through a door on the north elevation. Currently there is not a door on the shed. A historic photograph shows the original door had five horizontal panels.[34] It is not known what material the door was made out of, but Booker Conley does not remember anything other than wood doors on any of the sheds.[35] The door provides the only light and access to the interior.

Floor

The floor is a smooth finish poured concrete slab on grade.

Roof

The entire roof structure was badly deteriorated prior to stabilization and has been reconstructed to prevent further deterioration of the structure. An overhang extends one foot out from the walls in all directions. The roof structure is made of wood and historically was anchored into the top row of brick. New asphalt roll roofing covers the roof structure.

Mechanical and Electrical Systems

There are no mechanical or electrical systems in the Fire Protection Shed.

The Fire Protection Shed survives as a storage structure from the war era. With the exception of the recent stabilization work, no alterations or additions have been made over time.

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[34] "Permanent Party Personnel Ready for Inspection." *Station History 2164th AAF Base Unit, CPS, P, Tuskegee Institute, Alabama.* February 1-December 31, 1944. AFHRA, Maxwell AFB Collection.
[35] Interview with Booker Conley, September 26, 2001. The Jaeger Company.

Part II - Treatment & Use

Ultimate Treatment & Use

Requirements for Treatment

Alternatives for Treatment

Ultimate Treatment & Use

Two potential treatments based on the standard historic preservation treatments defined in *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* have been considered for the Fire Protection Shed. These two treatments are (1) Preservation and (2) Restoration. The Ultimate Treatment and Use Recommendation for the Fire Protection Shed is **Restoration of the exterior and Preservation of the interior.** This recommendation is evaluated based on the Criteria for Determining Treatment. The evaluation is followed by a summary of the steps needed to realize the treatment and a summary recommendation based on the practical feasibility of the treatment, the treatment's impact on historic materials, and its effect on the historic character of Moton Field as a whole.

The **Period of Significance** for interpreting the history of Moton Field is 1941-1945, the period during which the buildings and landscape at Moton Field were constructed and the Tuskegee Airmen were being trained in the primary flying school. 1945 is the **Restoration Date** identified for the restoration of extant buildings. 1945 is the date by which the entire complex at Moton Field associated with the training of the Tuskegee Airmen and the operation of the flying school had been constructed.

ULTIMATE TREATMENT AND USE RECOMMENDATION

The Ultimate Treatment and Use Recommendation for the Fire Protection Shed is **Restoration of the exterior of the shed and Preservation of the interior based on existing materials and features, historic photographs, and original site plans.**

The current condition of the Fire Protection Shed is very similar to its historic condition. With an appropriate door and historically accurate color scheme and roofing material, the shed can be returned to its war-era appearance. The building will only be viewed from the exterior where interpretative signage can explain the building's historic function. Visitors will not need to view the interior of the shed to be able to understand its wartime use.

Criteria for Determining Treatment

Following are the criteria that have been used in determining the recommendation for the ultimate treatment of the historic structures at Moton Field. An explanation of how the Fire Protection Shed meets each criterion for the treatment restoration of the exterior and preservation of the interior is provided.

• Significance and Value to the Site's Interpretation

The Fire Protection Shed was one of the earliest structures built at Moton Field and remains relatively unchanged since the World War II era. It is important to the interpretation of Moton Field as one of several auxiliary structures that illustrates the larger fire safety system that existed at the military airfield. The shed's change in uses over time also shows the almost constant need for larger facilities with the ever-increasing number of cadets training at the airfield.

• Existing Condition and Material Evidence

The Fire Protection Shed is in sound structural condition. Reconstruction of the wooden roof has recently weatherproofed the building to prevent further deterioration. In some places the mortar is deteriorated or missing completely. Surface discoloration exists on the west front facade brick. The original door and door frame are missing.

The unpainted brick walls and concrete floor of the building remain intact and provide tangible documentation of what the building originally looked like. No alterations had been made over the years until the recent stabilization work replaced the roof system.

• Archival Documentation

Historic documentation of the Fire Protection Shed building exists in the form of historic photographs and original site plans. A historic photograph from the war era documents the east front facade of the building. Later photographs show the shed in its deteriorated state in the 1990s. Historic site plans also document the building's location and relationship to other buildings as well as its changing function over time. These historic plans date from the time of construction through the end of the period of significance. There is no other documentary evidence about what specifically was stored in the shed.

Restoration/Preservation of the Fire Protection Shed

Restoration of the exterior of the Fire Protection Shed will seek to return the building to its historic appearance in 1945. This will conserve the building's existing historic fabric as well as allow visitors to view the building as it looked when it contained fire protection equipment. With the combination of historic site plans and photographs and the existing building, the restoration of the Fire Protection Shed can be accomplished. Further documentation, especially in the form of additional photographs, would be helpful in completing the restoration effort, but enough documentation presently exists to accurately restore the building's exterior. Preservation will seek to stabilize and repair existing materials on the interior to prevent further deterioration.

Restoration of the exterior of the shed will include repairing and restoring existing brick and mortar where necessary and replacing the missing door and door frame and roofing material. Following are items that should be addressed in the restoration. These items are not in order of importance or how they should be accomplished. A detailed work plan should be devised to establish an appropriate order for accomplishing the restoration work.

- Clean masonry walls with the gentlest method possible in heavily soiled areas.
- Repoint mortar joints where there is evidence of missing or deteriorated mortar using a mortar of a similar strength, composition, color, and texture to the existing mortar (see Conclusions in the *Mortar Analysis* in *Appendix D* for recommended compatible mortar); tool joints to match existing joints.
- Restore original color scheme of fascia board and door.
- Permanently attach roof system to brick walls by original method of tying frame into top row of brick.
- Replace new asphalt roll roofing with roll roofing that matches original.
- Recreate wooden door frame.
- Replace missing door with historic five panel wood door based on photographic evidence from the war era.

Preservation of the interior of the shed would simply involve the stabilization of existing materials which has already taken place when recent stabilization work was performed on all the buildings at Moton Field.

Additional Documentation Required for Restoration

Following are items that require additional information in order to achieve a complete and accurate restoration.

- Original treatment of shed roof
- Interior furnishings

Interpretation and Use of the Building

- Interpretative signage that includes historic photographs and site plans as well as text should explain the building's construction and how the building fit into the overall complex.
- Use interior space for modern storage with no public access or have interior open to public view, but no access, with or without furnishings to interpret use.

Systems Requirements Based on Use
Security System

- A monitored security system should be installed to provide notification of an intruder during closed hours. The security system should consist of motion detectors to be placed as inconspicuous as possible. Monitored doors and windows are not recommended due to the historic nature of the items and the disruptive installation necessary for these items. Provide the security system as an extension of the system installed in Hangar Number Two.

Summary Recommendation

Because the current condition is so similar to its historic condition, restoration of the Fire Protection Shed can be accomplished with relative ease. Restoration offers the best opportunity to conserve the building's historic fabric and fully interpret the role of this auxiliary structure at Moton Field during the war era. Therefore, restoration of the exterior and preservation of the interior is the Recommended Ultimate Treatment.

Requirements for Treatment

Legal mandates and policy directives restrict treatment of the Fire Protection Shed. The NPS's Cultural Resources Management Guideline (DO-28) requires planning for the protection of cultural resources "whether or not they relate to the specific authorizing legislation or interpretive programs of the parks in which they lie."

Section 106 of the National Historic Preservation Act (NHPA) mandates that federal agencies, including the NPS, take into account the effects of their actions on properties listed or eligible for listing in the National Register and give the Advisory Council on Historic Preservation a reasonable opportunity to comment.

To help guide compliance with the statutes and regulations noted above, the Secretary of the Interior's *Standards for the Treatment of Historic Properties* have been issued along with guidelines for applying those standards.

Issues of human safety and fire protection are addressed in the Administrative Data and Ultimate Treatment and Use sections. Proper abatement of any hazardous materials will be addressed in the construction phase of the project.

Alternatives for Treatment

One alternative for treatment has been considered and is presented here. It is **Preservation of the exterior and interior** of the shed in its current state. This alternative is evaluated based on the Criteria for Determining Treatment. This evaluation is followed by a summary of the steps needed to realize the treatment and a summary recommendation based on the practical feasibility of the alternative, the alternative treatment's impact on historic materials, and its effect on the historic character of Moton Field as a whole.

The **Period of Significance** for interpreting the history of Moton Field is 1941-1945, the period during which the buildings and landscape at Moton Field were constructed and the Tuskegee Airmen were being trained in the primary flying school. 1945 is the date identified during the period of significance by which the entire complex at Moton Field associated with the training of the Tuskegee Airmen and the operation of the flying school had been constructed.

ALTERNATIVE FOR TREATMENT: PRESERVATION

An alternative for treatment of the Fire Protection Shed is **Preservation** of the building as it now exists. Preservation would seek to maintain the existing character of the building, only making those repairs and alterations that are necessary to prevent further deterioration to the building itself and to eliminate any threats to life safety. In this treatment the interior of the building could be accessible to the public, viewed by the public through the doorway, or not accessible to the public at all. Historic photographs and illustrations would convey to visitors the building's original use.

Criteria for Determining Treatment

Following are the criteria that have been used in determining the alternatives for treatment of the historic structures at Moton Field. An explanation of how the Fire Protection Shed meets each criterion for the treatment of preservation is provided.

• Significance and Value to the Site's Interpretation

The Fire Protection Shed is an auxiliary building at Moton Field. It is significant for its role in the larger fire safety system at the field and is a valuable asset to the interpretation of the site setting. The shed's change in uses over time also shows the almost constant need for larger facilities with the ever-increasing number of cadets training at the airfield. Preservation of the existing building would retain and protect the shed.

• Existing Condition and Material Evidence

The existing building is in sound structural condition. Additional preservation work would be needed to protect the remaining historic fabric from further deterioration.

• Archival Documentation

Documentation in the form of historic photographs and historic site plans should be used to determine original features and materials of the shed.

Preservation of the Fire Protection Shed

Preservation of the Fire Protection Shed would involve stabilizing and repairing existing materials and features to make the building safe for visitors and keep it from deteriorating further. Interpretation of the building as it now exists should be as accurate as possible. Stabilization/preservation work should be clearly differentiated from the existing historic fabric.

- Repoint mortar joints where there is evidence of deteriorated mortar with mortar of a similar strength, composition, color, and texture to the historic mortar; tool to match existing.
- Permanently attach roof system to brick walls by original method of tying frame into top row of brick.
- If public access to the interior is to be restricted, then replace missing door with a historically accurate door.

Interpretation and Use Recommendations

- Interpretative signage that includes historic photographs and site plans as well as text could explain the building's construction and how the building fit into the overall complex.
- The interior could be publicly accessible or simply open to view.

Summary Recommendation

Preservation of the Fire Protection Shed would preserve the building's remaining historic fabric. Recent stabilization of the building has halted deterioration of the historic fabric. Preservation would not negatively impact the surviving historic fabric; rather, it would seek to protect the building from further decay. While preservation is a feasible alternative, restoration allows the best opportunity to fully interpret the building. Since restoration of the shed could be achieved with minimal effort, preservation is not the Recommended Ultimate Treatment.

Appendices

Appendix A

**Appendix A is located in a separate notebook that contains the supplemental archival documents, photographs, and architectural drawings for all Historic Structure Reports and the Cultural Landscape Report.

- Archival Documents
- Photographs
- Architectural Drawings

Appendix B

- Bibliography

Bibliography

Conley, Booker. Interview by Jon Buono, NPS; Anne Wilfer, Debbie Curtis Toole, and Courtney Foley of The Jaeger Company; and Mary Higginbothan, Paint Analysis Consultant, 26 September 2001. Moton Field, Tuskegee, Alabama.

Historic Photograph Collection, Air Force Historical Research Agency, Maxwell Air Force Base, Montgomery, Alabama.

Photographs of Moton Field, National Park Service, November 1997 and February 1998.

"Plot Plan, 66th AAF Primary Flying Field, Tuskegee Institute, Alabama," Edward C. Miller, Architect; G. L. Washington, Engineer; Louis A. Scipio, Draftsman, Approved by G.L.W., January 20, 1943. Tuskegee University Physical Plant, Tuskegee, Alabama.

"Proposed General Layout of Areas and Parking Spaces for Tuskegee Institute Primary Flying School," Drawn and designed by: H. H. Cooper (?), (no date). Tuskegee University Physical Plant, Tuskegee, Alabama.

Simpson, Dru. Interview by The Jaeger Company, December 5, 2001.

"Station History, 2164th AAF Base Unit.CPS.P, Formerly 66th AAFFTD, Tuskegee Institute, Alabama. Section IV-VII, 1 February – 31 December 1944." 234.821, Moton Field Collection, Air Force Historical Research Agency, Maxwell Air Force Base, Montgomery, Alabama.

Unnamed Site Plan, Drawn by George A. Reed, May 14, 1942. Tuskegee University Physical Plant, Tuskegee, Alabama.

Appendix C

- Conditions Assessment/ Features Inventory

FEATURE INVENTORY: EXTERIOR ENVELOPE

Fire Protection Shed

Historic Rating Designations

U - Undetermined	(The historic significance of the feature has not been determined)
H - Historic	(The feature has historic significance)
T - Treat as Historic	(The feature should be treated as if it has historic significance)
N - Not Historic	(The feature does not have historic significance)

All Estimable Items

Materials:	$3,230.00	Labor:	$1,499.00	Total =	$4,729.00

EXTERIOR	4110	Exterior Wall Surface	Brick

Feature Description: Standard dimension red brick units used in construction of exterior wall

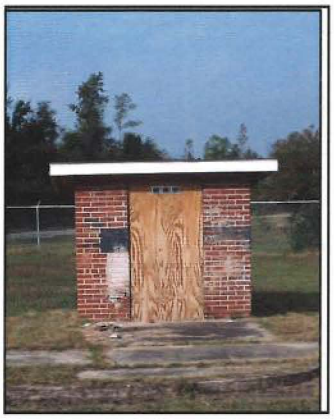
Feature Notes:

Feature Condition: Fair **Total Inventory:** 157 S.F.

Historic Rating: H **Priority:** Minor

Deficiency: Some staining and discoloration

Recommendation: Clean masonry walls to remove staining and discoloration without damaging exisitng brick and mortar.



Materials:	$25.00	Labor:	$195.00	Quantity:	Total =	$220.00

EXTERIOR	4110	Exterior Wall Surface	Brick

Feature Description: Exterior brick wall

Feature Notes:

Feature Condition: Fair **Total Inventory:** approx. 12 bricks

Historic Rating: H **Priority:** Serious

Deficiency: Mortar missing/ deteriorated in small area near entrance

Recommendation: Re-point mortar at missing and deteriorated areas.

Materials: $102.00 **Labor:** $400.00 **Quantity:** **Total =** **$502.00**

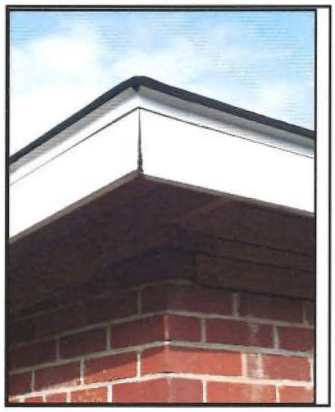
EXTERIOR	4111	Exterior Wall Structure	Wood

Feature Description: Exterior brick wall at opening header.

Feature Notes:

Feature Condition: Fair **Total Inventory:** 7 L.F.

Historic Rating: H **Priority:** Minor



Deficiency: Opening above door head in-filled with wood studs.

Recommendation: Reconstruct opening above door to original and restore roof system attachment by tying roof frame into the top row of brick.

Materials: $406.00 **Labor:** $225.00 **Quantity:** **Total =** **$631.00**

EXTERIOR	4113	Exterior Wall Trim	Wood

Feature Description: Roof fascia boards

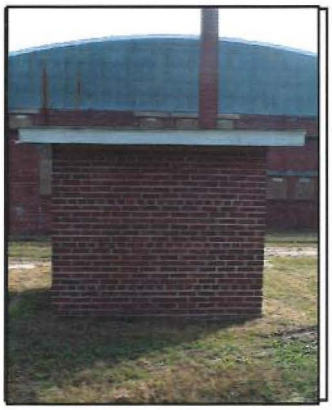
Feature Notes:

Feature Condition: Good **Total Inventory:** 37 L.F.

Historic Rating: H **Priority:** None

Deficiency: Fascia boards have been replaced during stabilization.

Recommendation: Restore original color scheme.



Materials: $110.00 **Labor:** $129.00 **Quantity:** **Total =** **$239.00**

EXTERIOR	4117	Exterior Eave/ Soffit	Wood

Feature Description: Exterior wood roof eave

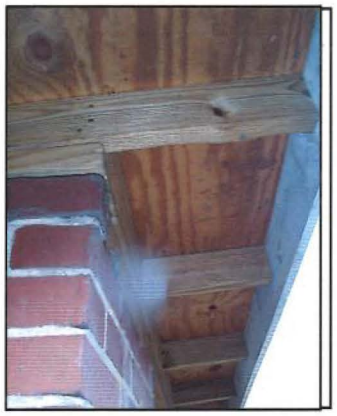
Feature Notes:

Feature Condition: Good **Total Inventory:** 37 S.F.

Historic Rating: H **Priority:** None

Deficiency: Entire roof structure was replaced during stabilization.

Recommendation: Repaint and restore original color scheme.



Materials: $72.00 **Labor:** $275.00 **Quantity:** **Total =** **$347.00**

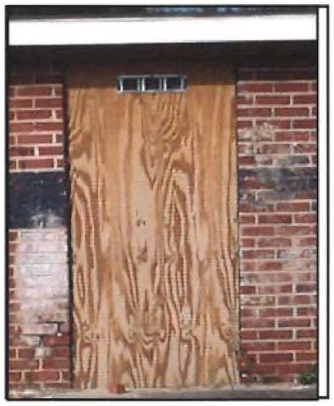
EXTERIOR	4150	Exterior Door Unit	Wood

Feature Description: Exterior Door Opening

Feature Notes:

Feature Condition: Fair **Total Inventory:** 1

Historic Rating: H **Priority:** Serious



Deficiency: Door and frame are missing and plywood installed in opening during stabilization.

Recommendation: Remove vented plywood, re-create door and frame based on historical photographs and re-install.

Materials: $2,515.00 **Labor:** $48.00 **Quantity:** **Total =** $2,563.00

EXTERIOR	4310	Roof Surface	Asphalt

Feature Description: Asphalt roof shingles

Feature Notes:

Feature Condition: Good **Total Inventory:** 85 S.F.

Historic Rating: H **Priority:** None

Deficiency: Asphalt roofing was replaced during stabilization.

Recommendation: Replace modern shingles with replicated shingles to match ortiginal installation.

Materials: $265.00 **Labor:** $227.00 **Quantity:** **Total =** $492.00

EXTERIOR	4311	Roof Structure	Wood

Feature Description: Wood roof system of shed

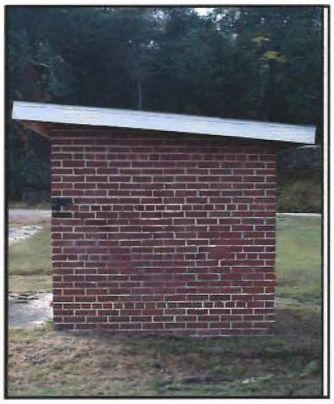
Feature Notes:

Feature Condition: Good **Total Inventory:** 85 S.F.

Historic Rating: H **Priority:** None

Deficiency: Roof structure was replaced during stabilization.

Recommendation: Utilize restored structure as is.



Materials:	Labor:	Quantity:	Total =	$0.00

Fire Hose Reels

Historic Rating Designations

U - Undetermined	(The historic significance of the feature has not been determined)
H - Historic	(The feature has historic significance)
T - Treat as Historic	(The feature should be treated as if it has historic significance)
N - Not Historic	(The feature does not have historic significance)

All Estimable Items

Materials: $450.00 **Labor:** $450.00 **Total =** $900.00

EXTERIOR	4111	Exterior Wall Structure	Wood

Feature Description: Exterior housing - Fire Hose Reel #1

Feature Notes: At least one of the fire hose reels has been salvaged for replacement to its original position.

Feature Condition: Poor **Total Inventory:** 1

Historic Rating: H **Priority:** Critical

Deficiency: Deteriorating

Recommendation: Relocate salvaged unit to original location. Repair and reconstruct missing items/ elements.

Materials: $150.00 **Labor:** $150.00 **Quantity:** **Total =** $300.00

EXTERIOR	4111	Exterior Wall Structure	Wood

Feature Description: Exterior Housing - Fire Hose Reel #2

Feature Notes:

Feature Condition: Poor **Total Inventory:** 1

Historic Rating: H **Priority:** Critical

Deficiency: Missing

Recommendation: Reconstruct housing and base to match original structure. Use historic information for reconstruction.

Materials: $150.00 **Labor:** $150.00 **Quantity:** **Total =** $300.00

EXTERIOR	4111	Exterior Wall Structure	Wood

Feature Description: Fire Hose Reel #3

Feature Notes:

Feature Condition: Poor **Total Inventory:** 1

Historic Rating: H **Priority:** Critical

Deficiency: Completely missing

Recommendation: Reconstruct housing and base to match original structure. Use historic information for reconstruction.

Materials: $150.00 **Labor:** $150.00 **Quantity:** **Total =** $300.00

Appendix D

- Materials Analysis
  - Paint Analysis
  - Mortar Analysis

PAINT ANALYSIS
OF
OIL STORAGE SHED
FIRE PROTECTION SHED
DOPE STORAGE SHED
MOTON FIELD
TUSKEGEE, ALABAMA

PREPARED
FOR
THE JAEGER COMPANY

BY
MARYELLEN HIGGINBOTHAM
PRESERVATION/DESIGN CONSULTANT
September 2002

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Frank Welsh Report		

INTRODUCTION

In the summer of 1941, Tuskegee Institute began the development of Moton Field in Tuskegee, Alabama. The extant historic buildings/structures at Moton Field are unique examples of facilities needed for basic flight training during the 1940s. The African-American pilots who trained here made a considerable contribution to the United States flight operations during World War II. After the war, the civilian uses of these buildings/ structures included civilian aviation, recreation, and housing in addition to Tuskegee Institute programs. Most of the buildings were vacant and deteriorated by the 1980s.

According to research conducted by the National Park Service and The Jaeger Company, construction of the main buildings/structures at Moton Field began in spring of 1941, with Hangar Number One, and concluded in the summer/fall of 1945, with the Skyway Club. These buildings/structures were constructed in Three Phases and all within five years. The nine extant historic buildings/structures are Hangar Number One, Entrance Gate, Control Tower, Bath and Locker House, Warehouse/Vehicle Storage Building, Dope Storage Shed, Oil Storage Shed, Fire Protection Shed, and Skyway Club.

SCOPE OF WORK

Paint analysis of the paint histories of the nine extant historic buildings/structures at Moton Field has been conducted in two phases. The project began at the request of Amy Kissane, Senior Preservation Planner at The Jaeger Company and is a part of The Jaeger Company's Moton Field Project for the National Park Service. The objective of the first phase of the paint analysis was a survey of the exterior/interior paint history for each of the nine buildings/structures to aid in the development of a restoration and interpretation plan for the site.

Phase One began with a site visit and a review of Moton Field maps, architectural drawings and photographs provided by The Jaeger Company. The site visits were coordinated with Debbie Toole, Architectural Historian for The Jaeger Company. Three days were spent on site at Moton Field. Multiple paint samples were taken from the main architectural elements on the exterior and interior rooms of the buildings or structures. An initial microscopic study of selected paint samples was conducted on site. During the study, more than 200 paint samples were examined under a lighted, 40X stereo microscope. Construction materials and finishes were also considered as tools in understanding the buildings'/structures' paint histories. Pigment analysis and spectrophotometric color matching were not included in this survey.

The objective of Phase Two was to determine, where possible, the paint schemes for the nine extant historic buildings/structures during the designated period of significance "1945". Nineteen paint samples from six buildings/structures were sent to Frank S. Welsh, an Architectural Coating Specialist, for specific color matching to Sherwin Williams Color Swatches. These samples were taken from buildings built just before and during World War II, a period when building materials were expensive and in short supply. Because it was felt that emphasis was on building and not repainting, Mr. Welsh was requested to color match to the original colors on each paint sample. Findings of Mr. Welsh and of the paint survey have been used to recommend, where possible, the color schemes for the nine extant historic buildings/structures at Moton Field.

This written presentation of the paint analysis of the extant buildings/structures at Moton Field includes a brief introduction, scope of work, general summary; paint histories material and color samples; and Mr. Welsh's report. Chromo-chronologies, paint layer sequencing, of each building/structure are presented when possible.

GENERAL SUMMARY

The paint histories of the extant buildings/structures at Moton Field are incomplete puzzles of paint, color, and materials. Time and the elements have not been kind to the original materials remaining in these buildings. In many cases, original materials are missing or so altered as to be unreadable. Paint was often applied thinly and inconsistently within rooms making some paint histories difficult to determine. No paint schedules were located to confirm paint colors. However, colors and paint mediums do provide a general paint history in each building/structure.

Construction materials contributed greatly to the exterior and interior decorative schemes of the buildings/structures. Colors used during the war years reflect the scarcity and cost of paint materials. Although Moton Field was not officially a military facility, the original paint colors found on the site's buildings/structures resemble the gray colors of military facilities of the era. Wooden buildings at Moton Field were painted varying shades of gray with gray to white trim. Building interiors were also painted grays but they became more colorful as the building uses changed over time.

Each building/structure will be discussed chronologically by period of construction and the rooms will be presented according to the POND Architectural Plans. When possible, original paint colors for main architectural elements on buildings and in rooms will be given.

PAINT ANALYSIS
OIL STORAGE SHED
FIRE PROTECTION SHED
DOPE STORAGE SHED

The Oil Storage Shed, the Fire Protection Shed, and the Dope Storage Shed were constructed between 1941 and 1943. They are of similar design and materials. Novelty board siding and fascia boards have been replaced and painted white.

EXTERIORS

Brick exteriors of the Fire Protection Shed and the Dope Storage Shed have never been painted. The brick exterior of the Oil Storage Shed has been recently painted. Novelty board siding and fascia boards have been replaced and painted white. Paint on the doors and door frames is so degraded that it was difficult to obtain clear paint histories. The sample of the Dope Storage Shed door and door frame that was sent to Frank Welsh showed only several layers of newer white paint. Door and frame samples that were examined during the initial survey showed at least three gray paint layers under two or more white layers. The initial door and door frame sample appears to be similar to the first exterior gray on the Bath & Locker House and to be Sherwin Williams #1001. (See Sample 1)

CHROMO-CHRONOLOGIES

Chromo-chronologies are presented for those exterior surfaces where there is sufficient substrate and/or paint evidence to determine a paint sequence for that surface.

The original paint layer in the chromo-chronology chart of the Sheds relates to the building construction dates of 1941 for the Fire Protection Shed, 1942 for the Oil Storage Shed, and 1943 for the Dope Storage Shed.

OIL STORAGE SHED
FIRE PROTECTION SHED
DOPE STORAGE SHED

Paint Colors	Doors and Frames
Original	light gray
Paint 2	light gray
Paint 3	dark gray
Paint 4	white
Paint 5	white

PAINT RECOMMENDATIONS

OIL STORAGE SHED
FIRE PROTECTION SHED
DOPE STORAGE SHED

By 1945, the period of significance for Moton Field interpretation, the Oil Storage Shed, the Fire Protection Shed, and the Dope Storage Shed would have been approximately two to four years old. During those four years the mission at Moton Field was building and training: not repainting. Thus, due to the site expansion and the scarcity and cost of paint materials during those four years of WWII it is unlikely that these buildings would have been painted more than once.

Novelty board siding and fascia boards had already been replaced at the time of this survey.

Two of the Sheds were completed at about the same time as the Bath and Locker House and were probably painted in a similar manner.

Architectural evidence, paint evidence and the above considerations indicate that for the Oil Storage Shed, the Fire Protection Shed, and the Dope Storage Shed during the 1945 period of significance, the appropriate color for the exterior wood elements would be gray, Sherwin Williams #1001.

The colors would be applied in the following manner:

Exterior

Novelty board siding	Sherwin Williams #1001
Trim, doors, and door frames	Sherwin Williams #1001

PRELIMINARY LABORATORY DATA

PROJECT	DATE OF ANALYSIS
MOTON FIELD TUSKEGEE, ALABAMA	7/22/02
SPACES	**ANALYST**
EXTERIORS	Frank S. Welsh

EQUIPMENT

- Bausch & Lomb stereomicroscope (10 - 105x)
- Nikon SKE polarized light microscope
- Schott halogen fiber-optic illuminator (3200K)

DESCRIPTION OF PRESENTATION OF LABORATORY DATA FROM THE ANALYSIS

- The following pages contain all of the requisite information found on each sample gathered during the preliminary laboratory analysis of the historically significant coatings.
- The information on these pages is the data upon which additional research and analyses can be based.
- Illustrations diagramming the locations from which the samples were taken are included in the Field Note - Sample Location sheets.

KEY TO THE ABBREVIATIONS USED IN THE LABORATORY DATA SHEETS

For Layer/Coat:
- P = prime or sealer coating
- I = intermediate or second prime
- Gr = ground or base coating for marbling or graining
- F = finish for final coating

For Color Name:
- W = white
- YW = yellowish white
- YG = yellowish gray
- GY = grayish yellow
- MRB = moderate reddish brown
- MOY = moderate orange yellow
- POY = pale orange yellow
- LT = light
- MED = medium

For Type of coating:
- O = oil
- D = distemper or calcimine
- Wsh = whitewash
- Vrn = varnish
- Stn = stain
- Pb = lead content

For Age:
- orig = original
- er = early
- md = middle
- lt = late
- c = century

Sample Number	Location/ Description	Layers and Comments
1	Hangar One, Hangar side of metal door into Room 1A.	There is only one layer of old paint on this sample. It is a dark gray, close to Sherwin Williams color # 2117. Above the gray are only 3 layers of new (1st and late 20th) paints.
2.	Hangar One, Plaster from interior north wall - Room 1A.	Sample taken at a patch - relatively new.
3.	Hangar One, Plaster from windows, north wall, Room 1B.	This plaster is very degraded. It does not appear to be very old. It is grayish white and has only one layer of faded + degraded green oil paint on its surface. The color of the green is close to S.W. Color # 1197
4	Hangar One, Paint from South door frame - Room 3 (wood)	The paint evidence is extremely degraded on this sample and almost impossible to evaluate w/ any accuracy. The first finish appears to be white, close to SW Color # 1004. The second layer is an aqua color. On another sample in the same envelope there is a second layer that is a Medium Blue-Green.
5	Hangar One Paint from wood door frame - hangar side into Room 17	The paint evidence on this sample is very degraded. There appears to be two layers of white oil paint - color close to SW # 1004 followed by a Medium Blue Green.

PRELIMINARY LABORATORY DATA SHEETS

Sample Number	Location/ Description	Layers and Comments
6	Dope Storage Shed. Paint from exterior door & frame	No old paint evidence is on this sample. There are only several layers of newer white paint.
7	Entrance gate. Concrete from niche	Very little substrate. There are only 2 or 3 layers of new white paint on this sample.
8.	Tower. Concrete interior wall	There are no paints on this sample.
9	Bath & Locker building, paint from exterior siding.	There are approximately 5 finish coats of light / gray oil paint on this sample. The first is a lead-based oil paint whose color is very close to S.W.# 1001.

Sample Number	Location/ Description	Layers and Comments
10	Bath & Locker building - exterior trim.	There are 5 layers of paint on this sample. They are: Lt Gray, Dark Gray, Lt Grays & White. The original light gray is the same as on #9.: SW Color # 1001.
11	Bath & Locker building, plaster north wall Men's Locker Room.	All but one plaster sample in the envelope have a medium gray oil paint as the first finish: It is close to SW Color # 2120
		One piece of plaster has a lighter gray as the first finish. Its color is close to SW # 2121
		Above these first finish coats on all samples are several newer whites + tans.
12	Bath & Locker building - window frame - Women's Locker Room.	There are no old paints on this sample There are only several new layers of white + Tan.

PRELIMINARY LABORATORY DATA SHEETS

Sample Number	Location/ Description	Layers and Comments
13.	Skyway club exterior siding.	There are 5-to-6 finish coats of Medium-to-Light Gray oil paint on this sample of siding. The first finish is close to S.W. Color # 1232
14	Skyway Club. Exterior trim	There are 5-to-6 layers of degraded white paint on this sample. The first finish coat is close to SW Color # 1004.
15	Skyway Club Room 108- North wall	- Newer gypsum board
16	Skyway Club Base board Rm 108	No paint is on this tiny sample.
17	Skyway Club Room 108- Ceiling	Fiber board.- a grayish white surface with a lot of mica.

Sample Number	Location/ Description	Layers and Comments
18	Skyway Club. Rm 121 gypsum board on North wall.	There are 4 layers of paint on this. sample. The first is buff and close to SW # 1358 The next 3 are light and medium greens.
19.	Skyway Club Fiber board North wall - Rm 124	The first finish paint on this sample is a buff close to SW Color # 1625. There are 4 layers above it. A grayish white, light gray and 2 greens.

LAW
RESOURCES CREATING SOLUTIONS

March 28, 2002

Ms. Debbie Toole
The Jaeger Company
119 Washington Street
Gainesville, GA 30501

Subject: **Moton Field Mortar Evaluation, Revision**
Moton Field Stabilization, Tuskegee Airmen National Historic Site
Tuskegee, Alabama
LAW Project No. 50157-1-4754-01-602

Dear Ms. Toole:

Law Engineering and Environmental Services, Inc. (LAW) has completed the mortar evaluation as authorized by your company on September 4, 2001. The purpose of this evaluation was to obtain samples of mortar from approximately nine buildings/structures, perform analysis of the mortar to determine its composition and to describe the aggregates. A visual condition survey of the buildings was not a part of the scope of work. This report is a revision of the report submitted on November 1, and the report submitted November 19, 2001. This report has been revised to reflect changes regarding the names of buildings and description of specimens.

Background Information

LAW understands there are a total of nine historical buildings/structures that were built as part of a World War II training facility (1941-1945) and are in the process of being restored. They include Hangar No. 1, Control Tower, Bath and Locker House, Warehouse/Vehicle Storage, Skyway Club, Dope Storage Shed, Oil Storage Shed, Fire Protection Shed and the Entrance Gate. We understand The Jaeger Company is assisting Pond & Company with renovation/restoration design of the facility.

LAW Engineering and Environmental Services, Inc.
396 Plasters Avenue, N.E. • Atlanta, GA 30324
404-873-4761 • Fax: 404-817-0175

Evaluation Procedures and Results

Site Work

LAW representatives, Mr. Mark Leeman and Ms. Marian Strukel, met with Jaeger Company's Ms. Debbie Toole at the subject site on September 28, 2001. The buildings/structures were observed and samples were taken. Selective sampling of existing masonry mortar and wall plaster materials were taken above-grade and at heights able to be accessed from standing on the ground; no ladders or manlifts were used. Samples were taken from interior and exterior walls. Five buildings/structures were sampled (a total of 10 samples were taken). Two samples of raw sand were taken, one from the road east of the Dope Storage Shed and one from the vicinity of Hangar No. 2. Sand was sampled for comparison purposes. We wanted to compare the sand sampled, both chemically and with respect to gradation, to the sand observed in the mortar.

Mortar samples were not taken from each building at the site. The mortar was observed to be fairly consistent throughout the site. A determination was made in the field that if the mortar was hard and competent then a sample may not have been taken for a particular building if the mortar was consistent with other buildings at the site. This was the case for the mortar at the Entrance Gate, the Skyway Club and the Warehouse/Vehicle Storage buildings. The mortar was judged to be hard and competent; therefore was not sampled for proportions.

Samples were taken at the following locations:

Sample	Construction	Location
1	Brick Mortar	Control Tower - exterior
2	Block Mortar	Control Tower - exterior
3	Brick Mortar	Dope Storage Shed - interior
4	Parge Coat	Hangar No.1 - interior
5	Brick Mortar	Hangar No. 1 - interior
6	Brick Mortar	Hangar No. 1 - exterior
7	Brick Mortar	Fire Protection Shed - interior
8	Brick Mortar	Fire Protection Shed - exterior
9	Plaster	Bath and Locker - interior
10	Gypsum Board and Paper	Bath and Locker - interior

Photographs of the buildings/structures and the samples taken at each location can be found attached to this report.

The masonry units of the structures observed were similar in appearance and were in satisfactory condition. We observed both clay brick masonry and concrete masonry. Deterioration in the form of cracks was not observed. Significant efflorescence staining was not observed on the masonry units. Areas of re-pointing were observed on the Control Tower. We understand this was a part of recent stabilization work.

The mortar observed was intact, competent and not easily scratched with a metal chisel. The mortar joints were well tooled and concave in shape. Several mortar joint surfaces had undergone weathering which resulted in sand particles being exposed on the surface. The mortar was well bonded to the masonry units. The mortar was strong and required significant effort to break out samples from the constructed masonry. In general, our selective sampling indicated the mortar was strong, but occasionally areas of softer mortar were observed. Since softer mortar was encountered infrequently, we did not consider it a representative condition and did not intentionally sample it.

A visual survey of the Skyway Club was performed, but samples were not taken. The mortar observed at this structure was similar to the others and competent. Ms. Toole informed LAW that the block used for the Skyway Club was made with local materials and called "Tuskegee Block". The parge coat mortar taken from Hangar No. 1 was intact, but could be broken easily. The sand particles on the surface of the parge coat were exposed and poorly bonded (Photo 11).

Softer mortar was observed in isolated areas of Hangar No. 1. The mortar appeared to have a higher lime content at some places than the other mortars observed. This determination was made by observation of the mortar color and the hardness of the mortar. The mortar inside Hangar No. 1 ranged from soft (easily scratched with a metal chisel) around the structural clay tile to medium hard around the brick. A section of the exterior south face of this building was re-constructed the summer of 2001. The white colored mortar with a brown surface smear coat was observed (Photo 12). The brown smear coat was applied for aesthetic reasons to match the new mortar to the existing one.

Laboratory Evaluation

Evaluation of the mortars was conducted in accordance with ASTM C1324 "Standard Test Method for Examination and Analysis of Hardened Masonry Mortar". Chemical evaluations and petrographic examinations were made of the mortars. No thermal analysis or x-ray diffraction was performed on the mortars.

Chemical evaluation results can be found in Table 1. The chemical results and petrographic evaluations indicated the mortars were similar in composition. The percentage of insoluble residue, soluble calcium oxide and soluble silica contents were similar in the samples analyzed.

Determination of the mortar composition was performed in accordance with the calculations of ASTM C1324, assuming a portland cement, lime, siliceous sand mixture. Chunks of lime were observed in several samples of the existing mortar, indicating this assumption is reasonable. However, if information becomes available to indicate the mortar was made using masonry cement, the proportion calculations can be adjusted. A package of masonry cement was observed at the project near the new brick construction. This indicates this mortar was made with masonry cement.

This is supported by the chemical evaluations; the proportions calculated are presented in Table 2. The use of non-masonry cement versus masonry cement are two means of achieving the same mortar after construction. The primary difference occurs with material selection and the amount of work performed by the on-site masons during construction. Chemical analysis indicated the mortars ranged from Type M to Type O using ASTM C270 Proportion Specifications. The mortars were generally Types S and N, but an occasional Type M and O were observed. In general, the mortars were hard and the classifications based on the chemical evaluations were in general agreement with our field observations.

The petrographic evaluations indicated the mortars were made with a natural sand. The sand particles were mostly quartz and other hard siliceous minerals. The particles ranged in size from ½ to 1½ millimeters (mm) and were subangular in shape. The sand particles were mostly clear to opaque, tan to smokey gray in color with less than approximately 10 percent of the particles dark in color. No significant component of calcareous aggregate was observed in the sand. The minerology of the sand indicated it was a local material. The mortars had an estimated air content of 10 to 20 percent. A lower air content of 5 to 10 percent was observed in the newer mortar located on the exterior wall of Hangar No. 1. The air voids observed in the samples were spherical in shape and evenly distributed in the mortar. The mortar color ranged from light gray to medium gray, except for the new mortar observed outside Hangar No. 1 which was white. This mortar was made with white portland cement. The mortars were hard to medium hard when scratched with a sharp metal instrument. Isolated particles of unhydrated lime were observed in the sample taken from the Fire Protection Shed (exterior, south face).

Freeze-thaw damage was not observed in the samples. Carbonation was observed in the samples taken from the Tower Building (mortar from block), Dope Storage Shed (interior), Hangar 1 (parge coat and interior) and the Fire Protection Shed (interior). The presence of carbonation was not unusual considering the age and exposure conditions of the structures.

The plaster sample analyzed from the Bath and Locker House was a gypsum-based material (Photos 20 and 21). This is typical plaster material. The gypsum board sample was analyzed similar to the mortars. There was an indication that gypsum was present, but it was not quantified.

The gypsum board was analyzed chemically and was determined to be a lime and sand mixture, with a binder to sand ratio of approximately 1 to 0.7.

Conclusions

The masonry units of the structures observed were similar in appearance and were in good condition. Deterioration in the form of cracks was not observed. Significant efflorescence staining was not observed on the masonry units.

The mortars observed were competent and did not crumble or break easily. The mortar was difficult to excavate at most locations. The mortar was intact in most locations and was not easily scratched with a metal chisel. The mortar observed was light gray to medium gray in color. The sand observed was a natural sand composed of quartz and other hard siliceous minerals. The mortar joints were well tooled and concave in shape. Freeze-thaw damage was not observed.

New mortar was observed on the exterior wall of Hangar No. 1. The mortar was white in color and had a brown smear coat applied to the surface. The brown coating provided a means of matching it to the existing mortar. LAW understands this area was re-constructed in the summer of 2001. The new masonry work appeared to be in good condition.

Petrographic evaluations and field observations indicated the mortars were similar in composition. Chemical analysis indicated the mortars ranged from a Type M to Type O based on ASTM C270 Proportion Specifications. The mortars were generally Types S and N, but an occasional Type M and O were observed. If re-pointing of the existing masonry is performed in the future, it is LAW's opinion that a reasonably strong mortar can be used without damaging the units. Softer mortars may result in increased watertightness in the mortar and better bond to the masonry units. A Type N mortar would be appropriate for most pointing purposes at the site.

The plaster sample analyzed from the Bath and Locker House was a gypsum-based material. This is typical plaster material. The gypsum board sample was analyzed similar to the mortars. There

was an indication that gypsum was present, but it was not quantified. The gypsum board was determined to be a lime and sand mixture, with a binder to sand ratio of approximately 1 to 0.7.

LAW appreciates the opportunity to have worked with you on this project. If you have any questions about this report, please do not hesitate to contact the undersigned.

Sincerely,

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Marian D. Strukel by MES w/permission
Project Engineer

Mark E. Leeman, P.E. (Georgia)
Principal Engineer

Attachments: Photographs
Moton Field Layout
Table 1 – ASTM C1324 Chemical Evaluation Results
Table 2 – Calculated Mortar Proportions

File: g:/lab/mstrukel/moton

Photo 1. Control Tower Building

Photo 2. Control Tower Building – West Face

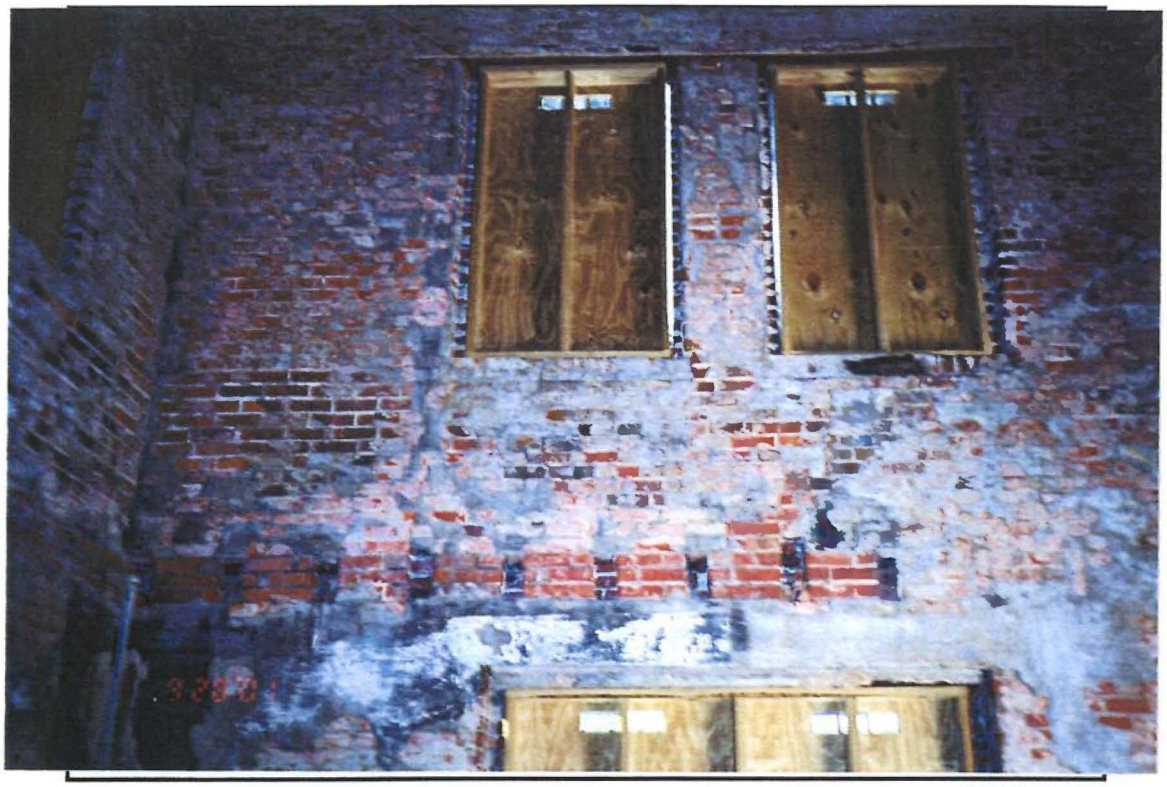


Photo 3. Control Tower Building – Interior North Face

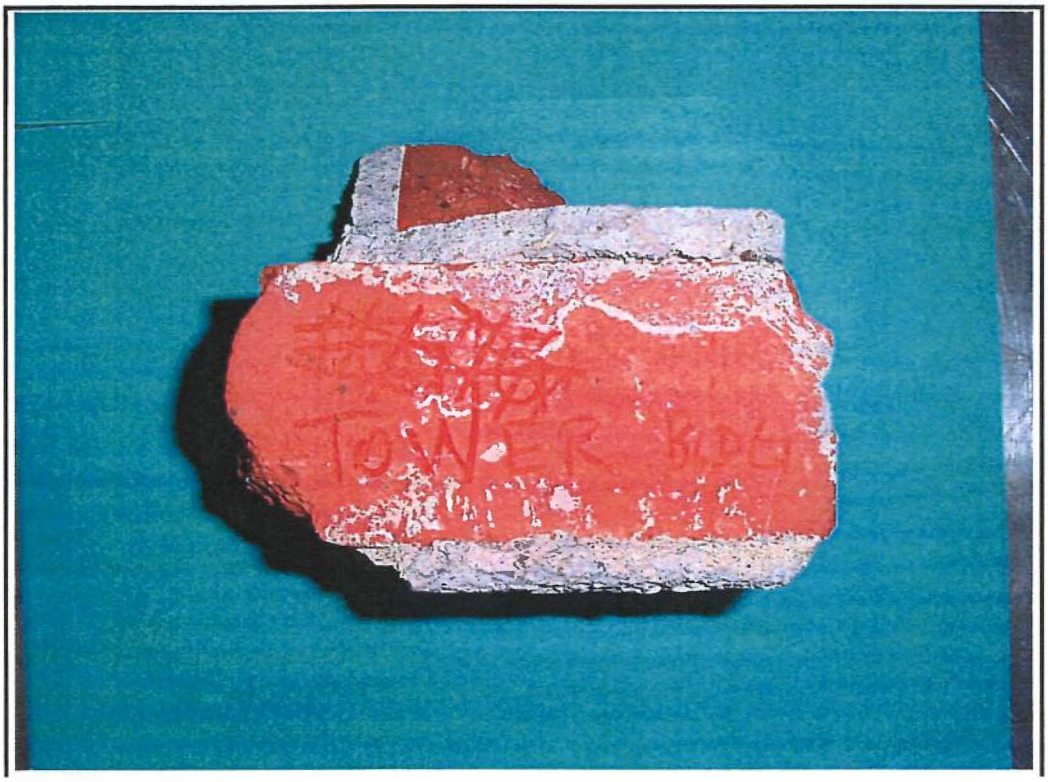


Photo 4. Brick/Mortar sample taken from exterior of Control Tower Building

Photo 5. Mortar samples from Control Tower – exterior west face of building

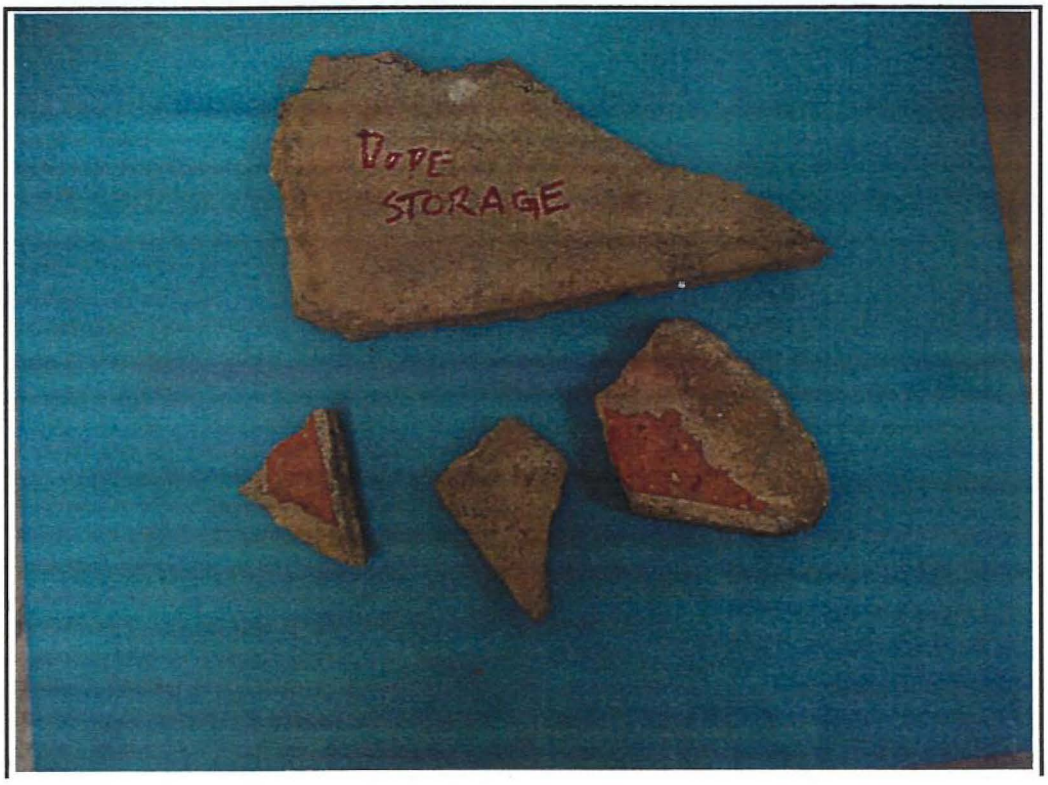


Photo 6. Mortar/Brick samples taken from interior of Dope Storage Shed

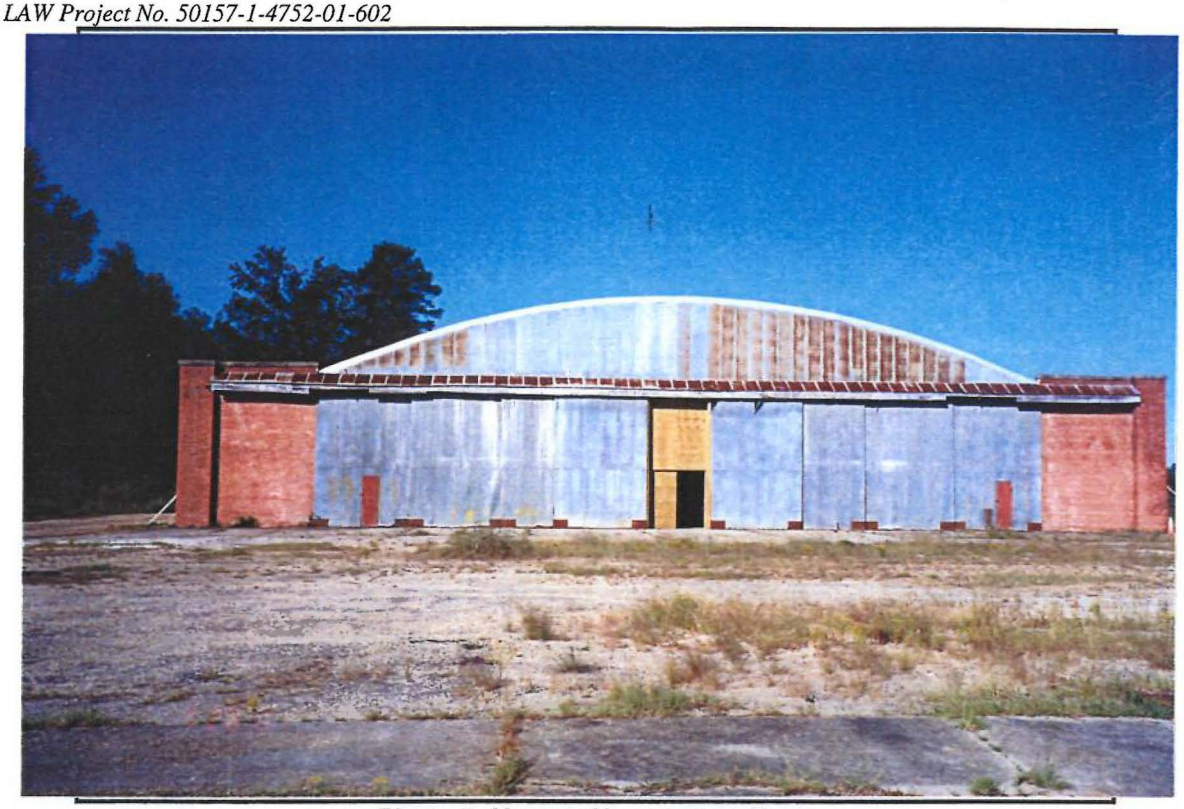


Photo 7. Hangar No. 1 – East Face

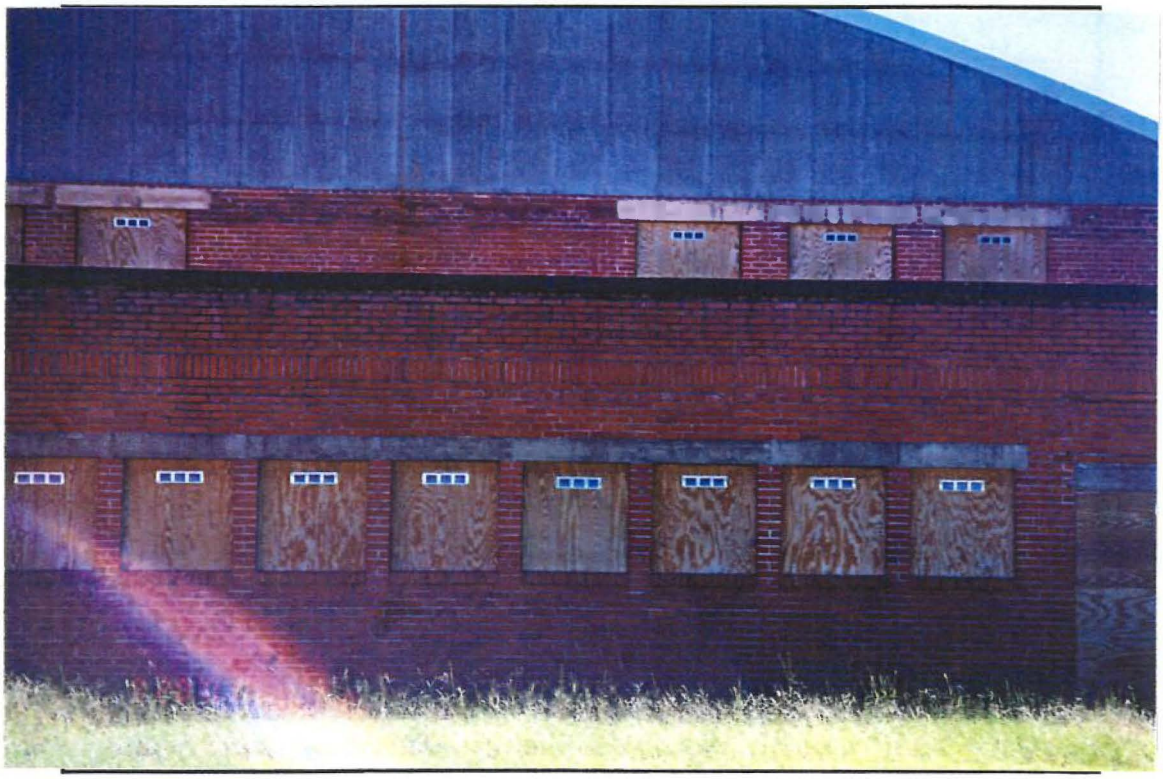


Photo 8. Hangar No. 1 – West Face

Photo 9. Hangar No. 1 – South Face

Photo 10. Hangar No. 1, Interior – Parge coat mortar observed on structural clay tile and masonry surfaces.

Photo 11. Hangar No. 1, Interior – Parge coat mortar observed. Note sand particles on surface poorly bonded to mortar.

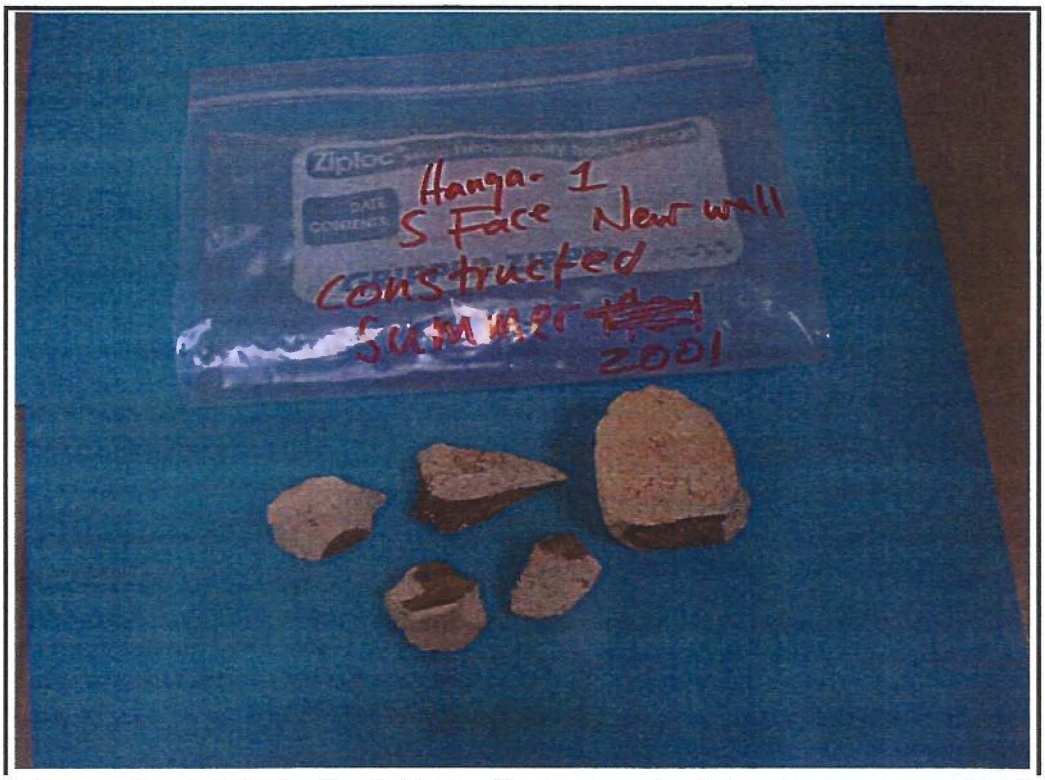


Photo 12. Hangar No. 1, Exterior South Face – Mortar samples taken from new construction. Note white mortar color (A) and brown smear coat (B) on tooled joint surface.

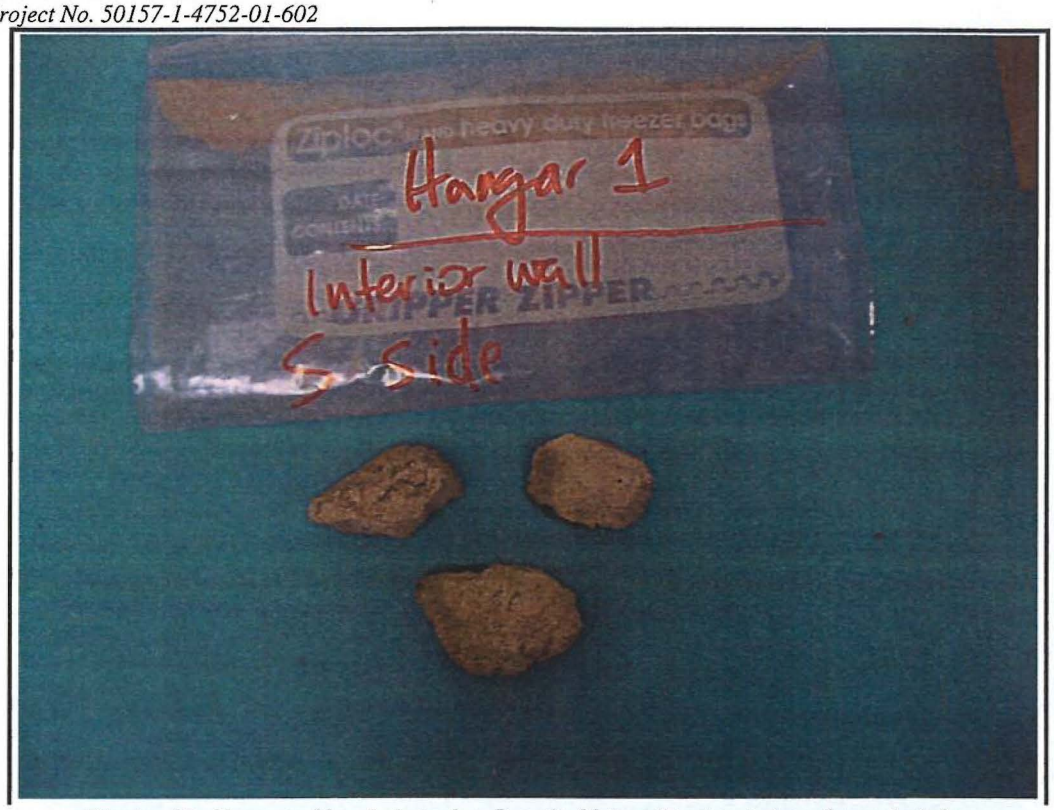


Photo 13. Hangar No. 1, Interior South Side– Mortar taken from brick

Photo 14. Fire Protection Shed – East Face

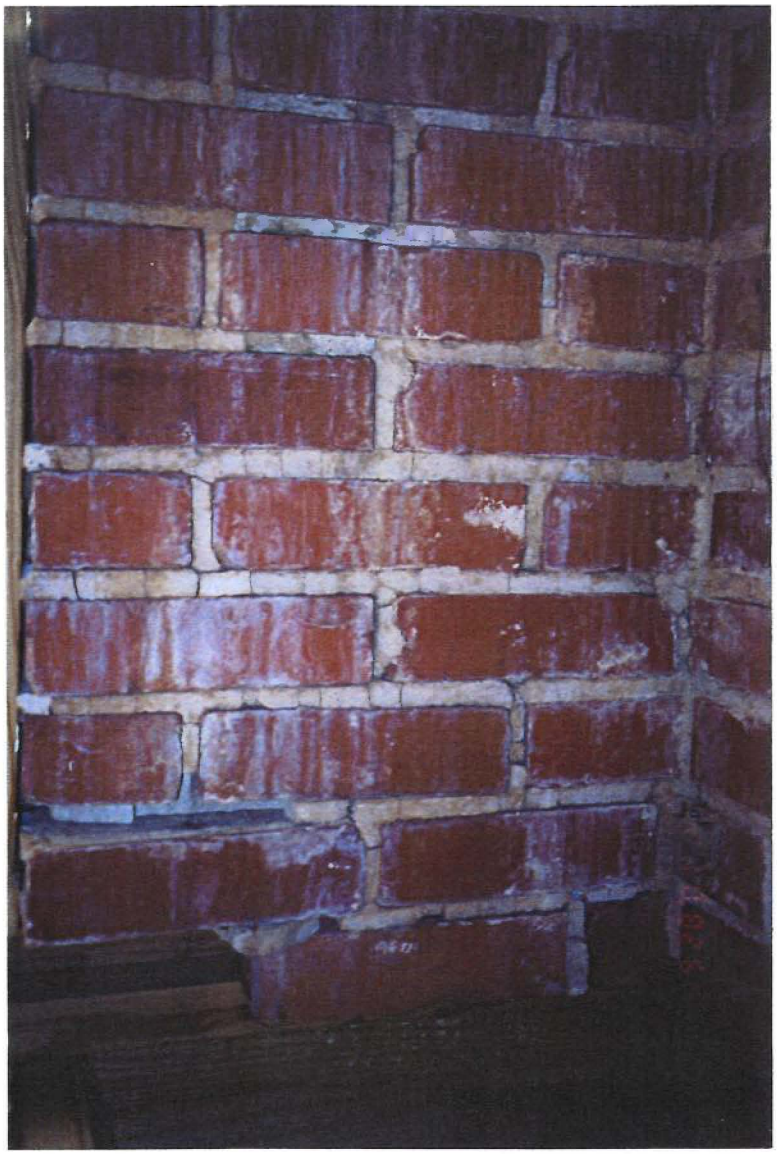


Photo 15. Fire Protection Shed – Interior face beside door. Note cracked mortar.

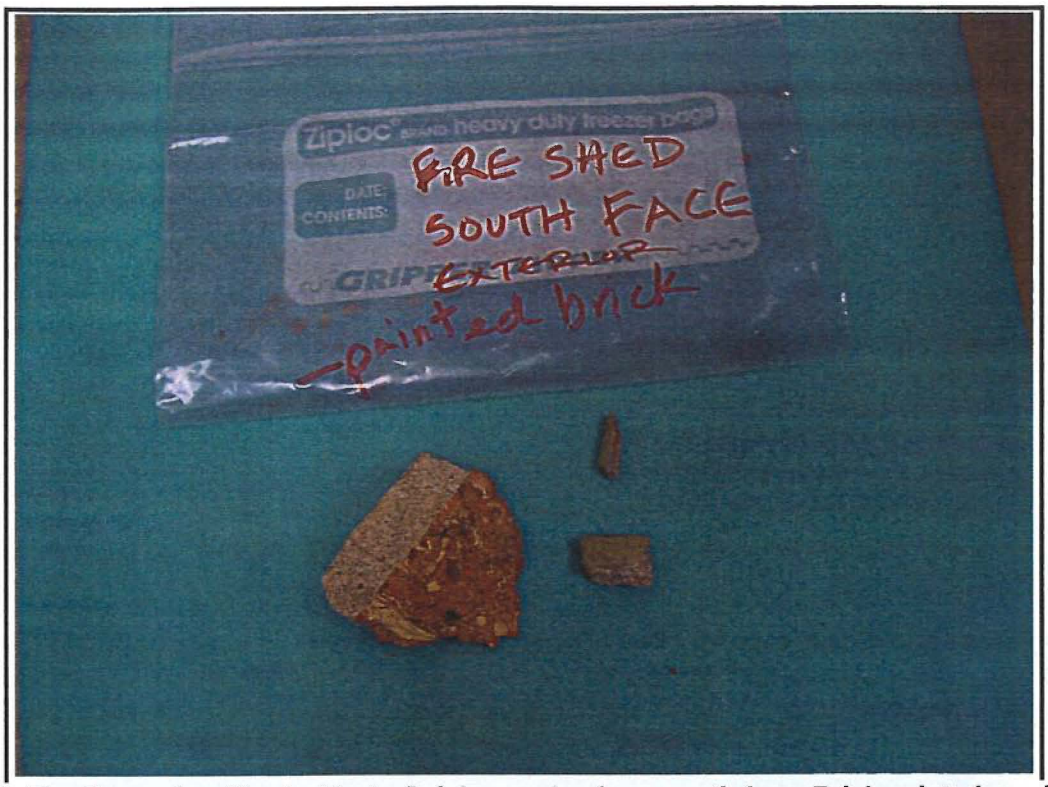


Photo 16. Fire Protection Shed – Mortar/brick samples from south face. Brick painted on side not shown.

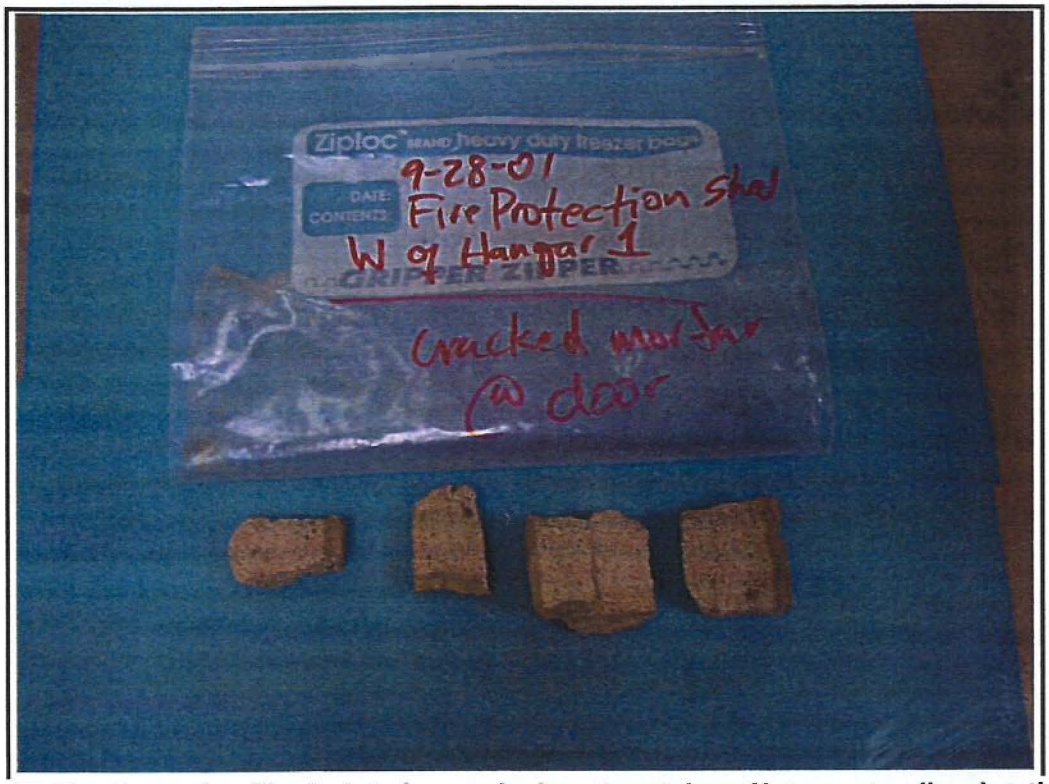


Photo 17. Fire Protection Shed – Interior cracked mortar at door. Note mortar discoloration at surface (extending approximately ¼ inch from surface).

Photo 18. Bath and Locker House – East Face

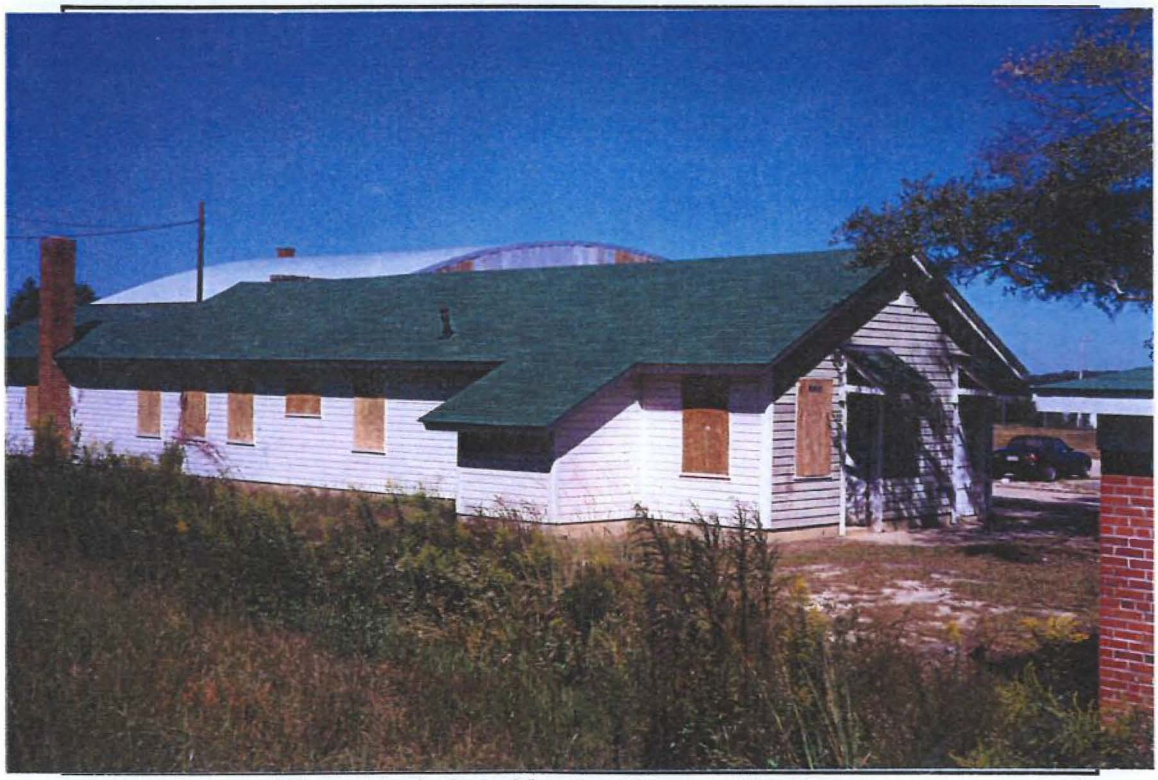


Photo 19. Bath and Locker House – West Face

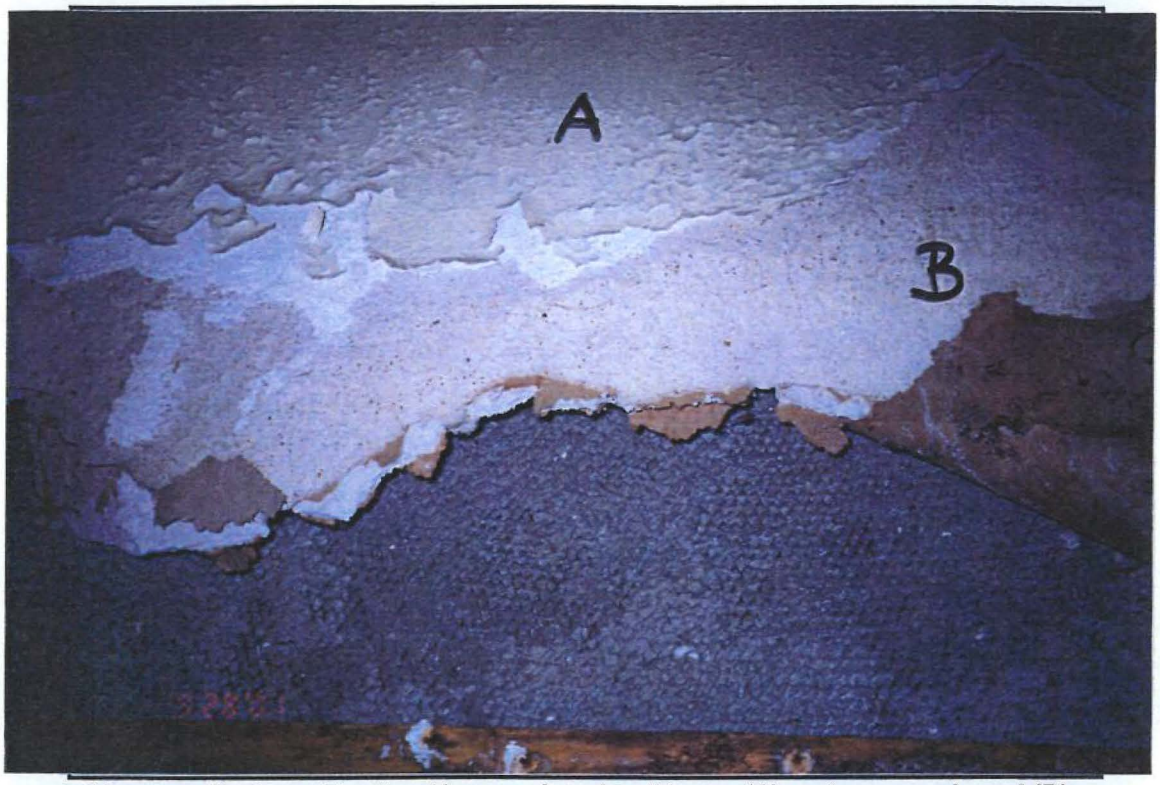


Photo 20. Bath and Locker House – Interior, Plaster (A) and gypsum board (B)

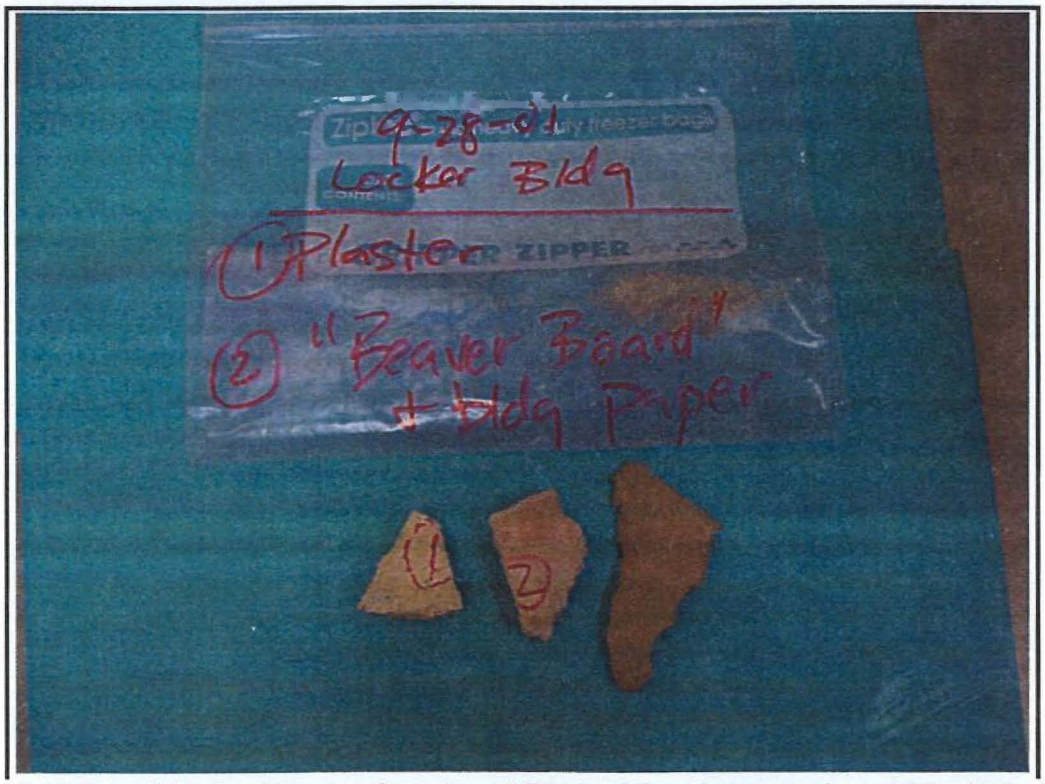
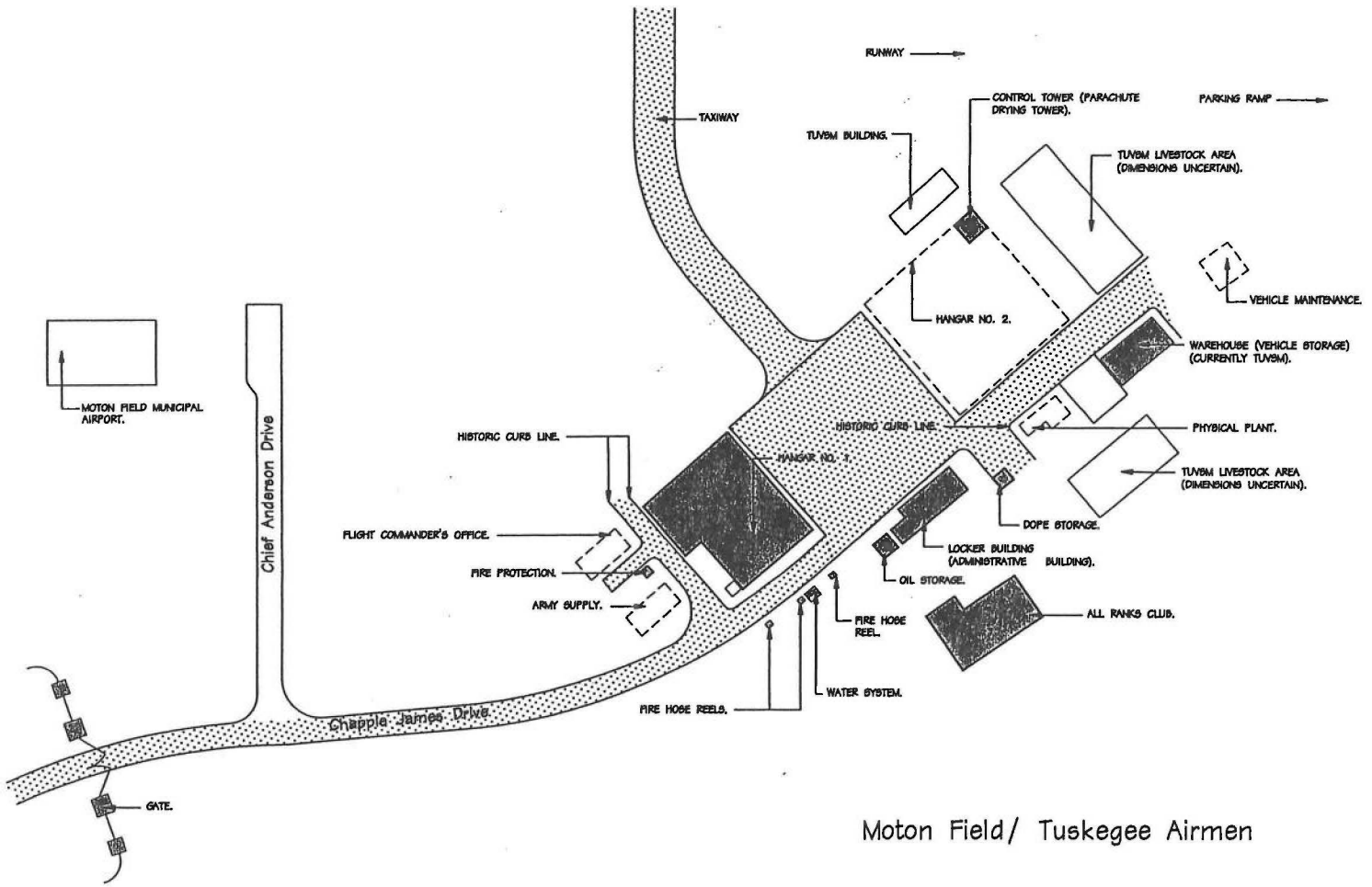


Photo 21. Bath and Locker House – Samples of Plaster (1) and gypsum board (2) with building paper (3)

Photo 22. Skyway Club – East Face



Moton Field/ Tuskegee Airmen

SITE PLAN
SCALE: N.T.S.

GENERAL NOTES

1. REMOVE [illegible] FROM ALL HISTORIC STRU[illegible] AND ALL TREES, SHR[illegible] OVERGROWTH W[illegible]IN 8'-C[illegible] HISTORIC STRUC[illegible].
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS INCLUDING, BUT NOT LIMITED TO, MATERIALS, SIZES, AND EXISTING CONFIGURATIONS. NOTIFY THE CONTRACTING OFFICER OF MAJOR DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
3. ALL NEW AND EXISTING WOOD SHALL BE TREATED WITH A BORATE SPRAY.

LEGEND

- EXTANT HISTORIC REBOURCE
- NON-EXTANT HISTORIC REBOURCE
- EXTANT NON-HISTORIC REBOURCE
- EXTANT HISTORIC LANDSCAPE FEATURE
- NON-EXTANT HISTORIC LANDSCAPE FEATURE
- EXTANT NON-HISTORIC LANDSCAPE FEATURE

SEAL

BOND Company
Architects & Engineers
[illegible]

DESIGNED: DRD
CADD: DRD
TECH. REVIEW: RAS
DATE: 03/15/00

SUB SHEET NO. C1

TITLE OF SHEET: SITE PLAN

MOTON FIELD STABILIZATION
TUSKEGEE AIRMEN NAT'L HISTORIC SITE
TUSKEGEE, ALABAMA

DRAWING NO. 459 / 80,016
PKG. NO. —
SHEET 2 OF 52

Drawing location: M:\DWG\NATPARKS\20071\DWG\A00.dwg Date Plotted:05-APR-2001 4:24:05 PM

Table 1: ASTM C1324 Chemical Evaluation Results

Chemical Analysis (%)	Dope Strg Int. Wall	Hangar 1 New Const	Hangar 1 S. Int.wall	Locker Blg Beaver Brd	Locker Blg Plaster	Fire Shed W.of Hang 1	Fire Shed S. Exterior	Tower Blg Ext. W.Face
Soluble SiO2	3.36	4.28	4.99	0.26	0.84	3.87	2.85	3.83
Soluble CaO	18.32	22.15	15.6	26.15	15.82	14.36	13.62	15.24
Soluble MgO	1.02	0.66	0.74	1.65	2.92	0.45	0.8	2.49
Insoluble	62.25	63.73	65.95	46.61	64.75	67.01	68.72	65.2
Total Solids	84.95	90.82	87.28	74.67	84.33	85.69	85.99	86.76
LOI 110C (free water)	0.87	3.24	0.89	2.01	1.75	0.86	0.7	1.02
LOI 550C (combined water)	2.63	3.65	2.27	19.29	7.23	2.53	4.11	4.28
LOI 950C (carbonates)	10.23	4.79	8.6	2.01	3.82	7.95	8.54	6.57
Total	98.68	102.5	99.04	97.98	97.13	97.03	99.34	98.63
ASTM C1218M Water Soluble Sulfate (SO4)					11.79			

Table 2: Calculated Mortar Proportions

Constituent	Volume by Parts							
	Dope Strg Int. Wall	Hangar 1 New Const	Hangar 1 S. Int.wall	Locker Blg Beaver Brd	Locker Blg Plaster	Fire Shed W.of Hang1	Fire Shed S. Exterior	Tower Blg Ext. W.Face
portland cement	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
lime	1.6	1.4	0.1	63.6	10.3	0.4	1.1	0.6
sand	4.6	3.7	3.3	44.2	19.0	4.3	5.9	4.2
total cemetitious	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
sand	1.8	1.5	3.1	0.7	1.7	3.0	2.8	2.6
ASTM C270 Type	O	S*	M			S	N	N

* Based on masonry cement