National Park Service
U.S. Department of the Interior

Antietam National Battlefield
Maryland

Visitor Center
HISTORIC STRUCTURE REPORT



Final Report
August 2017



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HISTORIC STRUCTURE REPORT

Visitor Center

Antietam National Battlefield
Sharpsburg, Maryland

August 2017
Final Report

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Chapter 1: Executive Summary

Statement of Purpose and Project Goals

The purpose of this Historic Structure Report is to guide the preservation, rehabilitation, and interpretation of the Visitor Center at Antietam National Battlefield in Sharpsburg, Maryland. Antietam National Battlefield preserves, commemorates, and interprets the Battle of Antietam, which took place on September 17, 1862. The battle was significant as one of the bloodiest conflicts in the Civil War, and for its larger impact on the outcome of the Civil War and President Abraham Lincoln's decision to issue the Emancipation Proclamation. It is also significant as a site of post-battle memorialization and monumentation. The Visitor Center was constructed in 1962 as a project of the National Park Service's Mission 66 program, a ten-year program with a major goal of improving visitor access and amenities at National Parks nationwide. It was intended to provide a central facility for visitor orientation and comfort, interpretation, and park administrative and maintenance functions. The Visitor Center was designed by consulting architect William Cramp Scheetz, Jr., in conjunction with the National Park Service's in-house architects in the Eastern Office of Design and Construction. The contractor was W. Harley Miller Company. The building was designed in the Modern style common to Mission 66-era visitor centers with a horizontal silhouette, set into the side of a hill so that, while the building has multiple stories, it appears to be one story. Major additions to the Visitor Center include the expansion of the lobby in 1973, expansion of the restrooms in 1978, and the addition of an auditorium on the north side in 1980. While the Visitor Center has been well-maintained over its lifetime, it has a number of functional and mechanical issues including lack of accessibility, circulation inefficiencies, and poorly functioning environmental systems, which will need to be addressed in the near future. This HSR documents the history and chronology of change to the building in order to understand its evolution and the decision-making processes that led to changes in the past; describes and evaluates existing conditions, including architectural, structural, and building systems; and presents a

treatment philosophy and recommendations to ensure that future work preserves the character-defining features of the site and building. The HSR is largely confined to the building itself, with some consideration of the site as it relates to building issues. An assessment of the cultural landscape is not part of this report.

Investigation History and Methodology

The task of preserving a historic site requires a disciplined approach to analyzing historical evidence, documenting physical conditions, and anticipating the future needs of the property. This is accomplished by using a variety of investigative procedures. These include researching primary and secondary sources, performing detailed physical surveys of the structures and site, consulting with specialists in materials and construction methodology, and employing scientific technology.

Historic research was largely limited to materials provided electronically by the National Park Service and the archival collections of Antietam National Battlefield. The project historian viewed the latter collections at the National Park Service's Museum Resource Center in Hyattsville, Maryland, where they are permanently archived. Copies of materials were made at that facility and visual materials (photographs, drawings) were later scanned and provided to the HSR team. Limited additional research was undertaken to supplement these collections, which was generally comprehensive but not necessarily exhaustive.

The consultant team, including architectural, structural, building systems, and hazardous materials consultants, performed on-site survey on Thursday, February 9, 2017. Temperatures were in the 20s-30s Fahrenheit that day, with sunny skies. A light layer of snow had fallen the previous night, but this did not prevent visual access or evaluation. Survey was largely visual, with no destructive testing aside from the collection of samples for hazardous material evaluation. Photographs were taken and have been used to supplement the narrative where appropriate.

The recommendations in this report are based on documentary evidence and visual observations collected to date. The research process is not concluded with the completion of this report. Rather, it will be supplemented in the future by further information gathered through additional investigation, and by subsequent documents and information as they are discovered.

Project Team Members

The National Park Service contracted with a team of professionals to complete the HSR. The team consists of:

Alpha Corporation, Dulles, VA, serving as prime consultant and providing structural assessment.

Quinn Evans Architects (QEA), Washington, DC, serving as team leader for the preparation of the HSR, and providing historic documentation, architectural evaluation, and architectural drawings.

Summer Consultants, McLean, Virginia, providing mechanical, electrical, and plumbing services.

ARC Environmental, Baltimore, MD, providing hazardous materials testing.

Conservation Solutions, Inc., Clinton, MD, providing mortar analysis.

Report Organization

The Historic Structure Report is organized as follows:

Chapter 1: Executive Summary
Presents the statement of purpose and project goals, project team members, investigation methodology, report organization, and a summary of findings.

Chapter 2: Administrative Data
Provides background information including locational data, related studies, and cultural resource data.

Chapter 3: Developmental History
Presents and analyzes the site chronology as derived from historical and physical investigations, including site history, summary chronology, preliminary evaluation of significance, list of character-defining features, and historic images.

Chapter 4: Condition and Systems
Presents, analyzes, and evaluates the existing site features and drainage, exterior envelope, interior finishes, structural systems, and mechanical, electrical, and plumbing systems.

Chapter 5: Analysis
Presents the philosophical approach to treatment that guides the treatment recommendations, and provides a code analysis.

Chapter 6: Treatment Recommendations
Presents recommendations for the appropriate treatment and use of the building, including treatment recommendations for the site, exterior envelope, interior finishes, structural systems, and mechanical, electrical, and plumbing systems.

References
Provides a bibliography of sources used in the preparation of this report.

Appendices
Includes supplemental reports

Summary of Findings

Statement of Significance
The Visitor Center at Antietam National Battlefield meets the registration requirements established for Mission 66-era visitor centers under two Multiple Property Documentation Forms: the 2012 draft MPDF for Mission 66-era Resources in the National Capital Region, and the 2015 Final MPDF for Mission 66-Era Resources (nationwide). In addition, a nomination is currently being prepared by National Capital Region staff for Mission 66-Era Resources at Antietam National Battlefield. While this HSR does not include a formal evaluation of eligibility, the research presented here suggests the Visitor Center is potentially eligible for listing in the National Register of Historic Places, with a recommended period of significance of 1962-1963, encompassing its construction, opening, and the installation of landscaping.

Existing Conditions
The Antietam Visitor Center is in relatively good condition. National Park Service staff have kept up with most required maintenance items with only a few areas of concern noted. In general, the most significant issues related to the building are functional. They include lack of accessibility, circulation issues related to large visitor numbers at peak times, and multiple HVAC systems leading to conflicting systems and poor conditioning of spaces.

Treatment Recommendations
There are several renovation projects that are important to the future of the building. Primary among these is the need for disabled access to the entire building for visitors and staff. In addition to providing accessible sidewalks and doors, an excellent location is available for an elevator that would reach all three levels of the building. For better circulation and more space in the lobby and restrooms, the recommendation is to remove the structural column in the lobby, expand the lobby to the west to align with the current stone restroom screen wall, and enclose this space to provide a new interior entrance to the restrooms, leaving the current corridor for dedicated access to the auditorium.

Also, there is only one exit from the lower level that has the two exhibit rooms and rangers offices. Adding another exit from these spaces to the exterior is also critical. Other recommended work includes replacing rotting sunscreen elements, repairing minor structural issues, and replacing the multiple HVAC elements with one system that can be zoned for different requirements throughout the building.

Chapter 2: Administrative Data

Locational Data

The Antietam National Battlefield Visitor Center is located north of Sharpsburg, Maryland. Sharpsburg lies just east of the Potomac River, which forms the boundary of Maryland and West Virginia. The Visitor Center is located on Dunker Church Road, off Sharpsburg Pike (Route 65) The building is situated on the east side of Dunker Church Road on a natural rise overlooking a large portion of the battlefield. Parking for the Visitor Center is along a curved drive between the building and Dunker Church Road.

Proposed Treatment

There are no major changes anticipated to the function and use of the Visitor Center. It is expected to remain the main visitor contact and orientation facility for the Park. Recommendations for the building are generally limited to changes to improve its functionality and accessibility and address code requirements.

Related Studies

Antietam National Battlefield is extremely well documented, with many academic studies and popular histories written about the site's history, the contextual history of the Civil War, the movements and placements of troops before, during, and after the battle, and the monuments and memorials placed at the site following the battle. To date, there has been no comprehensive study of the Visitor Center.

A National Register of Historic Places nomination for Antietam National Battlefield was approved in 1982, and an amended nomination with additional documentation was approved in 2009. The eligibility status of the Visitor Center was not evaluated under either nomination. The 1982 nomination does not mention the Visitor Center. The 2009 nomination does discuss the addition of the Visitor Center to the site but does not include it either as a contributing or a non-contributing resource. Neither nomination identifies a specific period of significance. The 1982 nomination lists the battle date, September 16-18, 1862 as a

significant date and also identifies a general period of 1800 to 1899. The 2009 nomination leaves the significance section blank.

Cultural Resource Data

The Antietam National Battlefield Visitor Center is not listed in the National Register of Historic Places and has not been formally evaluated for eligibility at this time. It was included in a Multiple Property Documentation Form for Mission 66 Resources in the National Capital Region prepared in 2012, but its eligibility was not formally determined as part of that project. An amended National Register of Historic Places nomination for Antietam National Battlefield is currently being prepared by National Capital Region staff. This nomination will clarify the period of significance for the entire historic district and provide a formal evaluation of the eligibility of the park's Mission 66-era resources. The building does not appear on the National Park Service's List of Classified Structures for Antietam National Battlefield.

Recommendations for Documentation

There are no significant recommendations for documentation. The current HSR will guide treatment and use of the Visitor Center in the future. A National Register of Historic Places nomination for Mission 66 Resources at Antietam National Battlefield is already being prepared. The only additional documentation recommended at this time would be a Cultural Landscape Report for the Visitor Center area.

Chapter 3: Developmental History

Introduction

The Visitor Center at Antietam National Battlefield was constructed in 1962 as part of the National Park Service's Mission 66 program to upgrade visitor access and facilities at National Parks across the United States. It was constructed on high ground overlooking large portions of the main battlefield of the Battle of Antietam. Over the years, the Visitor Center has had several major additions, which are generally complementary to the original character of the building.

Historic Background and Context

The Battle of Antietam, Memorialization, and Early Visitor Accommodations, 1862 to 1955

The Battle of Antietam, which took place on September 17, 1862, was one of the most significant conflicts in the history of the American Civil War. It has been extensively written about by both scholarly and popular authors, and it is not relevant within the scope of this document to capture the details and complexities of the battle, its causes, and its aftermath. However, a general outline of the events and significance of the battle are presented here for context.[1]

The Battle of Antietam (Sharpsburg) took place near Sharpsburg, Maryland, in the Hagerstown Valley.[2] At the time of the

1 Summarized from "Antietam National Battlefield," National Register of Historic Places nomination (1982, amended 2009) and "The Battle of Antietam," summary history by the National Park Service, https://www.nps.gov/anti/learn/historyculture/upload/Battle%20history.pdf.

2 The Hagerstown Valley is the Maryland portion of the Great Valley, a continuous basin spanning the eastern side of the Valley and Ridge province of the Appalachian Mountain region. It continues north as the Lebanon Valley in Pennsylvania and south as the Shenandoah Valley in Virginia. National Park Service, "Series: Physiographic Provinces: Valley and Ridge" https://www.nps.gov/articles/valleyandridgeprovince.htm.

battle, the area had been settled by Euroamericans for about 100 years. The valley's lands were rich and farming was a prosperous occupation; the region's prosperity also gave it good transportation connections via turnpikes, canals, and railroads. Its richness also attracted Confederate General Robert E. Lee, who decided to come to Maryland in September 1862 in order to gain a new source of supplies and fighting men. On September 17, 1862, Lee's forces met those of Union General George B. McClellan at Antietam Creek near the village of Sharpsburg. In that one day of fighting, there were over 23,000 soldiers killed, wounded, or captured, making it the bloodiest one-day battle in American history.[3] While there was no decisive victory for either side, the Confederate Army retreated back across the Potomac the following evening (September 18th), ending Lee's advance into Maryland. Spurred in part by the events at Antietam, President Abraham Lincoln issued the Preliminary Emancipation Proclamation on September 22 (the final Emancipation Proclamation was issued on January 1, 1863). The battle also had a significant impact on the local population, not only through the damage and destruction of their property but also by the lingering trauma of being first-hand witnesses to the slaughter of that day, caring for the wounded following the battle, and the effects of essentially turning their farmlands into graveyards. Beyond the immediate effects of the battle, local residents also suffered from disease brought by the troops and the lingering political ramifications of the Civil War.

In 1865, the Maryland state legislature established a cemetery for the interment of the bodies of the soldiers who died at Antietam, of which many had lain on the battlefield or in temporary graves in the surrounding area for three to four years following the battle. The cemetery was dedicated on September 17, 1867, the fifth anniversary of the battle.[4] In the same year, a two-story stone building was built within the walls of the cemetery for use as a custodian's office (also used as the cemetary superintendent's house and office, and now called the National Cemetery Lodge). This building was later used as the museum and administrative office of the Antietam Battlefield site until the construction of the Visitor Center in 1962. In 1877, the cemetery's trustees transferred the title and responsibility of caring for the cemetery to the U.S. War Department.[5]

In the 1880s, efforts began to formally preserve the sites of key Civil War battles, led by veterans from both the North and South.

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3 Estimates vary from source to source and are not always clear on the numbers of dead, wounded, and missing.

4 Frederick Tilberg, "Museum Prospectus: Antietam National Battlefield Site," July 31, 1957, 1. Original in the National Archives, copy in the archives at Antietam National Battlefield.

5 Charles W. Snell and Sharon A. Brown, *Antietam National Battlefield: An Administrative History* (Washington, DC: National Park Service, 1986), 25-26.

Among the first of these battlefields to be officially designated for preservation by the War Department was Antietam, which was authorized as "Antietam National Battlefield Site" by an act of Congress signed on August 30, 1890.[6] During the 1890s, the War Department pursued two methods of preserving Civil War battlefields. The first, known as the "Chickamauga plan" after the battlefield at Chickamauga and Chattanooga in Georgia and Tennessee, involved the acquisition of large portions of the land comprising the battlefields and their preservation and administration by the War Department. The second method focused on the acquisition of small strips of land and rights-of-way along key roads and areas to mark the lines of battle and to provide places for visitors to view battle locations without disturbing the adjoining private agricultural land. This was known as the "Antietam plan" as it was the method pursued at Antietam National Battlefield Site, and it was seen as a much more economical plan, especially in areas, like Antietam, that were deemed likely to remain in agricultural use for the foreseeable future. Throughout the 1890s, Congress provided funds for the acquisition of these rights-of-way and small strips of land (about 22 acres in total at a cost of $3,311.78) to construct roads to accommodate visitors, who had already been coming to the battlefield for a number of years.[7]

Congress also provided funds to map the battlefield and erect tablets to interpret important events of the battle. Several monuments existed prior to the battlefield's designation in 1890, but in the next several decades, various monuments were dedicated by states or veteran groups to mark regiment positions and to memorialize the fallen. In 1921, the Dunker Church, a local landmark and focal point of the battle, was severely damaged in a storm. A local Sharpsburg resident later purchased the property, salvaged the remaining building materials, and then resold the land, leaving only the foundation until the National Park Service reconstructed the building and rededicated it in 1962.[8]

By the 1930s, the battlefield at Antietam was an established and increasingly popular historic site. In 1933, President Franklin D. Roosevelt signed an executive order transferring 48 historical areas, including Antietam National Battlefield Site, from the War Department to the National Park Service (NPS).[9] The Superintendent of the new NPS unit estimated in 1934 that nearly 20,000 people had visited the site in a six month period, and requested improvements including comfort stations, parking, a guide service, and a museum to accommodate the increased

6 Snell and Brown, *Administrative History*, 68.
7 Snell and Brown, *Administrative History*, 89-99.
8 Keith Snyder, "Antietam Remembered: A Walking Tour," booklet published by the Western Maryland Interpretive Association, in cooperation with the National Park Service, 7-8.
9 Snell and Brown, *Administrative History*, 146.

numbers (most of these services were not built at that time).[10] Under NPS administration, the Park was authorized to accept donations of land, and Park lands grew from 50 acres in 1934 to over 128 in 1943. It was not until 1960, however, that the Park Service was authorized to purchase land.

The question of interpretive facilities continued to be debated through the early 1940s, when the Park requested construction of a museum at the cemetery to accommodate exhibition of relics and education for visitors.[11] A new museum building was a hard sell during the Depression and World War II, and the Park had to make do with museum space on the second floor of the 1867 National Cemetery Lodge, shared with Park administration.[12] It was at this time that Regional Supervisor of Historic Sites, Roy Edgar Appleman, identified a plot on the New York Monument reservation as the ideal location for an administration/museum building, due to its panoramic view of the battle site.[13] A new museum/administration building would not come to fruition, however, until the National Park Service focused on the provision of visitor amenities under the Mission 66 program.

The Mission 66 Program, 1956-1966[14]

The Mission 66 program was developed to address a significant crisis facing the National Park Service in the late 1940s and early 1950s. After the founding and initial development of the National Park Service in the 1910s and 1920s, the NPS entered a long period of reduced funding during the Depression of the 1930s, World War II in the 1940s, and the Korean War in the early 1950s. In the 1930s and 1940s, this lack of funding, while

10 John K. Beckenbaugh, Superintendent, to the Director of the National Park Service, report dated August 15, 1934, National Archives, in the archives at Antietam National Battlefield.

11 "Project Construction Program – Buildings" dated September 30, 1941, National Archives, in the archives at Antietam National Battlefield; J. Walter Coleman, memorandum for the Regional Director, Region One Headquarters, dated November 17, 1941. Original in the National Archives, copy in the archives at Antietam National Battlefield.

12 J. Walter Coleman, memorandum for the Regional Director, Region One Headquarters, dated November 17, 1941. Original in the National Archives, copy in the archives at Antietam National Battlefield; Director, National Park Service, memorandum for the Regional Director, Region One, dated January 8, 1942. Original in the National Archives, copy in the archives at Antietam National Battlefield.

13 Roy Edgar Appleman, Regional Supervisor of Historic Sites, memorandum for the Regional Director, dated September 28, 1942. Original in the National Archives, copy in the archives at Antietam National Battlefield.

14 This section summarized from Ethan Carr, *Mission 66: Modernism and the National Park Dilemma* (Amherst, MA: University of Massachusetts Press, 2007) unless otherwise cited.

problematic, was offset to a certain extent by Depression-era federal government programs like the Works Progress Administration and the Civilian Conservation Corps, and reduced visitation during World War II. In the immediate post World War II period and during the Korean War, the federal government showed little inclination to increase funding for the National Park Service. By the early 1950s, the Park Service was facing a backlog of insufficient infrastructure, deteriorated buildings, and inadequate facilities.

At the same time, parks across the country were inundated with visitors. Postwar prosperity, combined with the rise of the automobile culture, resulted in skyrocketing visitor numbers. Visits to national parks in 1956 had more than tripled from their low point in the 1940s. Not only were park staff overwhelmed and unable to provide interpretation—or even assure safety—for so many visitors, but the park infrastructure and facilities could also not cope with the numbers. Roads and parking lots designed for the early automobile era were woefully inadequate for cars in the size and numbers that became common in the 1950s. Visitors found very few amenities available, from overnight accommodations to even basic facilities like restrooms.

Aside from the logistics of dealing with so many visitors, the increased visitation created other problems. The lack of facilities to service so many people and cars threatened the very resources that the parks were founded to preserve. Crowded roads, parking lots, and campgrounds spilled over into areas that should have been protected, and the lack of staff meant rangers were limited in their ability to prevent damage to park resources. Another problem that the Park Service faced was the unfulfilled expectations of visitors. In the post war period, the American public had come to expect modern facilities, which were being provided by everything from their local supermarket to the for-profit recreational and entertainment ventures that were springing up to cater to them. Instead they found park facilities that dated from twenty or thirty years previously and that failed to provide the easy access they anticipated. The situation was frequently portrayed as dire in local and national media, with the implication being that the Park Service might have to close parks.

The end of the Korean War, the election of Dwight D. Eisenhower as President, and the appointment of a new NPS Director, Conrad Wirth, proved to be key events in securing an infusion of funding for the National Park Service. In 1956, Wirth proposed an ambitious ten year capital program to the President and Congress. Taking as its goal the 50th anniversary of the NPS in 1966, Wirth proposed over $700 million in spending over the next ten years. Known as “Mission 66”, the program secured the largest amount of federal funding for the Park Service since the New Deal programs of the 1930s. Over the next ten years, Congress spent nearly a third more than Wirth had originally

proposed, a total of over $1 billion, for needs all across the Park Service, including improvements to infrastructure and facilities, acquisition of new parks and construction of new buildings, and increased staff and training.

The Mission 66 Visitor Center

While Mission 66 funding supported a variety of improvements, the most visible and lasting legacy of the program was the over one hundred visitor centers constructed as a result of the program. The visitor center was a new building type, designed to cater to the hordes of new visitors to national parks.

As the name implied, the visitor center was a facility conceived to provide one central location for visitor services, in contrast to the earlier tendency to decentralize functions. Designers drew on contemporary planning ideas and used modern architectural styles and materials. While some contemporaries and many later critics saw this as a misguided emphasis on the visitor experience rather than conservation of cultural and natural resources, the Park Service made the argument that centralization of functions meant that parks could better protect their resources by managing visitor circulation. More visitors and amenities could be accommodated in the larger, more functional spaces allowed by the use of modern design and materials. Many visitor centers were located closer to park entrances and major roads, and the centralization of functions pulled orientation, interpretation, administration, and amenities farther back from protected resources. There were exceptions, though, as some visitor centers were actually placed close to park resources, with the goal of providing better interpretation.

The use of modern architectural styles and materials was controversial even at the time, and represented a clear departure from the “Rustic” style that had prevailed in the NPS’ first several decades. In one sense, this was simply a practical consideration on the part of the Park Service. The simple design and availability of mass-produced materials like concrete and steel made Modern-style visitor centers more affordable, meaning more could be built. The modernist approach took advantage of elements of modern design such as free plans and flat roofs to provide more space and flexibility for architects in accommodating visitor amenities such as restrooms, museum exhibits, and audiovisual presentations.

Beyond that, however, many in the Park Service administration believed that modern architecture served a very important design purpose. Much as preservationists today recognize that new construction needs to be differentiated as such in order to prevent a false sense of history, the Park Service architects and designers of the Mission 66 era rejected what they saw as the false historicity and attention-seeking design of the rustic era. They hoped that the plainness and simplicity of modern

design would focus attention on the park's cultural and natural resources rather than on the visitor center itself. Visitor centers were a place to see from, rather than a place to be seen. This did not mean, however, that "Park Service Modern," as the style came to be known, was entirely divorced from site context and historic precedent. While the ornamentation and "pseudo-vernacular imagery" of the Park Service Rustic style were gone, Park Service Modern architecture often used elements such as local materials (stone and wood) or visual cues such as textured concrete and earth tones to harmonize with the larger landscape.[15]

Visitor center designs came from a variety of sources. Many, particularly smaller buildings, were the product of National Park Service architects, designers, and landscape architects. Park Service architects and designers were initially based in two offices, the Eastern (Philadelphia) Office of Design and Construction (EODC) and the Western (San Francisco) Office of Design and Construction (WODC). In 1962, the National Capital Office of Design and Construction (NCDC) was established to oversee design in that region. With construction of more than ten visitor centers per year, however, the Park Service could not handle the expected volume. Instead, the Park Service hired consulting architects (individuals or firms) to design or complete the larger or higher profile centers. Many of these architects are now recognized as some of the most significant designers of the Modernist period, including Richard Neutra, Mitchell and Giurgola, and Eero Saarinen.

As noted above, the Mission 66 visitor center was designed to accommodate multiple functions in one structure. These structures were naturally larger than many older Park Service buildings, but architects attempted to ameliorate this size through a number of design techniques. Where the building could be sited on a slope, it would be designed on two levels, with the one story portion facing the "public" side. A number of designs divided portions of the building functionally, with a central orientation and information section and wings to each side to separately house visitor and administration functions. These wings would sometimes be structurally separate "pods" connected to the central section via a covered or enclosed walkway.

Despite the Park Service's stated goal of simple and plain structures that sublimated themselves to the surrounding landscapes, the location and style of the structures inevitably made many stand out. Often prominently located near major roads, the use of Modern design and materials was distinctive, particularly in contrast to the often rural or wilderness surroundings. The centers were characterized by open

15 Sarah Allaback, *Mission 66 Visitor Centers: The History of a Building Type* (Washington, DC: National Park Service, 2000), 22-24.

interior spaces and expansive areas of glazing designed to accommodate large numbers of visitors and provide them with sweeping views of the nearby cultural and natural resources.

Although the Mission 66 program undoubtedly reinvented the National Park Service and many of the parks in the system, a true understanding of its legacy is still developing. The Modernist visitor centers and other structures constructed during this era represent the second generation of National Park Service architecture. The first generation—the "Rustic" style buildings that emphasized natural materials and their association with the surrounding landscape—had become the Park Service ideal in many minds. The Mission 66 style, by contrast, never became an ideal. Critics of the style—and there were many at the time and in succeeding decades—saw the structures from this era as too intrusive and too destructive to the natural and cultural resources of the park. They believed that the Mission 66 development leaned too much on the side of public access, at the expense of overdevelopment. This illustrated one of the perennial tensions inherent in the park system, the task of balancing conservation versus access. More recently, as the Mission 66 buildings begin to meet the 50 year "historic" threshold, there has been an effort to reassess their significance and contribution, and a gradual recognition of their historic importance.

Mission 66 and the Antietam National Battlefield Site Visitor Center, 1956-1964

The Mission 66 period at Antietam coincided with the approaching centennial of the Battle of Antietam (September 17, 1962). Although interest in the battlefield had been increasing throughout the first half of the twentieth century, the Park Service anticipated that the activities surrounding the battlefield's centennial would increase pressures on the visitor facilities at Antietam. Addressing those pressures would be a major focus of Mission 66 at Antietam. At the same time, the National Park Service was beginning to see serious development activity in the area, and they were concerned for the integrity of the battlefield.

Planning for Mission 66 improvements at Antietam began in early 1956. In May of that year, the NPS estimated a program of improvements amounting to approximately $200,000 in expenditures, including $185,000 for buildings and utilities and $11,000 for roads and trails. Projects envisioned included a visitor center, road improvements, expansion of utilities, interpretive markers, and land acquisition. The plan was further developed over the course of the year as the NPS analyzed its needs for the Park and set goals.[16]

16 "$200,000 Earmarked for Antietam Battlefield," *The Daily Mail* (Hagerstown), May 31, 1956, 1; "Planning Team Makes Studies for

Over the next two years, 1957-58, the plans for development at Antietam were further refined. A major element of the Mission 66 program at Antietam was the acquisition of land. In part, this was to preserve the battlefield from rapidly encroaching development, but it was also needed because Mission 66 funding could only be spent on lands owned by the US government.[17] Up to 1960, Congress had not authorized the acquisition of land at Antietam by purchase with federal funds. From the 1890s to 1960, the size of the national battlefield site had grown from the initial 22 acres to just over 182 acres (with an additional 11 ½ acres in the national cemetery). Those additional lands were acquired largely through donations by public and private entities to the federal government, including plots previously held by states and municipalities containing monuments, areas needed to expand and improve existing roadways, and sites such as the Dunker Church, which was donated by the Washington County Historical Society in 1953.[18]

During the post-World War II period, development pressure was being felt in the area. Postwar prosperity, suburbanization, and the greater mobility afforded by faster automobiles and better roads meant that agricultural lands in the Sharpsburg area were being eyed for redevelopment into housing tracts. Several farms near the Antietam battlefield were proposed for subdivision and rural housing development, alarming NPS officials. In 1958, Antietam Superintendent Harry Doust emphasized the importance of federal acquisition of the lands on which the battle had been fought to protect it from housing and industrial development; he feared "we have already waited 50 years too long."[19]

In April 1960, Congress expanded the Park's legislative boundary to 1,800 acres and authorized expenditures to purchase land (up to 600 acres) or acquire scenic easements within the expanded boundary. During the Mission 66 land acquisition period at Antietam National Battlefield (ending in 1967), the federal government purchased almost 600 acres in fee simple which, with a few additional acres acquired by donation, transfer, or easement, resulted in NPS ownership of just over 870 acres of land by 1972.[20]

Another significant program of Mission 66 at Antietam was the improvement of the existing tour route to provide a more

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Antietam," *The Morning Herald* (Hagerstown), December 6, 1956, 1.

17 Susan Trail, *Remembering Antietam: Commemoration and Preservation of a Civil War Battlefield*, Ph.D. Dissertation, (Department of American Studies, University of Maryland, College Park, 2005), 367-369.

18 Snell and Brown, *Administrative History*, 252-254.

19 "Foley to Seek Federal Purchase of Farmland on Which Battle of Antietam was Fought," *The Daily Mail* (Hagerstown), December 9, 1958, 12.

20 Snell and Brown, *Administrative History*, 313-19.

comprehensive visitor experience, including additional tour stops/interpretive exhibits, parking areas, and the elimination of exterior traffic through bypasses. Although much of the work was finished, one bypass and several of the tour stops were not completed as envisioned, as not all of the land could be acquired.[21] Other major infrastructure improvements were also implemented, including the re-routing of State Route 65 to bypass the battlefield, a new bridge over Antietam Creek to eliminate vehicle traffic over the historic Burnside Bridge, and the construction of new trails along the tour route.[22]

The most significant Mission 66 program at Antietam was the planning and construction of the new Visitor Center. Park staff had expressed the need for expanded exhibit and administrative space since the NPS took over administration of the site in the early 1930s, but until the mid 1950s, proposals had been put off both for cost reasons and to focus on the development of interpretation on the battlefield. With the introduction of the Mission 66 program and its emphasis on provision of visitor amenities, the construction of a Visitor Center at Antietam became a priority project in 1956. The Visitor Center at Antietam was the first newly constructed visitor center in what would become the National Capital Region of the National Park Service, although at the time it was located in Region V (Northeast Region).[23]

Although a site on the New York Monument Plot had been identified for a museum as early as 1941 (because the NPS owned that land), the Superintendent of Antietam at the outset of the Mission 66 program, Harry Doust, preferred a site near the National Cemetery for the new Visitor Center. However, historian Roy Appleman strongly objected, stating that a location near the New York Monument site was much better for providing an expansive view of the battlefield and its important locations. While this appeared to conflict with the larger concern of encroaching development on the battlefield, it was another example of the Mission 66 tension between preserving historic sites and providing better visitor access. In this case, NPS Director Wirth decided in favor of visitor access, and Appleman's location was selected.[24]

Development of plans for the Visitor Center took place in 1957-58. In March 1957, Superintendent Doust prepared a project construction program proposal form (PCP) for the construction

21 Trail, *Remembering Antietam*, 415-416.
22 Snell and Brown, *Administrative History*, 351-353.
23 Antietam National Battlefield was transferred to the National Capital Region in 1971 when regional boundaries were realigned. David Nathanson, compiler, "Chronology of National Park Service Regional Structure," 1998, https://www.nps.gov/hfc/services/library/regions.cfm.
24 Trail, *Remembering Antietam*, 410-411, 373-374.

of a Visitor Center with administrative offices, a library, museum, and exhibits, to connect to existing utilities. The proposed building would be approximately 3500 square feet, with a concrete foundation, frame and stone walls, wood or metal windows and doors, and oil-fired water heating. Doust estimated the total cost for design, construction, exhibits/audiovisual, office furnishings, equipment and contingencies at $181,100. An additional $14,700 was estimated for landscaping and parking around the proposed Visitor Center, as well as funds for extending electrical lines to the new building ($1,200), constructing a septic tank and disposal field ($9,900), installing a water system and tank ($25,100), and extending telephone lines ($800).[25]

Very little information was found on the design development of the Antietam Visitor Center. Like many Mission 66 visitor centers, its design was a collaboration between architects of the Eastern Office of Design and Construction (EODC) and a consulting architect, in this case William Cramp Scheetz, Jr. Scheetz' previous work for the NPS included the restoration of Anthony Hall at Harpers Ferry and the visitor center at Hopewell Culture National Historical Park in Chillicothe, Ohio. Scheetz, who studied at the University of Pennsylvania, started his career in his father's firm, Savery, Scheetz, and Gilmour, before opening his own firm.[26]

In July 1957, historian Frederick Tilberg prepared a prospectus for the Visitor Center outlining plans for expanding and improving interpretation at the site, with a new Visitor Center being the most "urgent need." Tilberg's prospectus noted that the existing museum space, on the second floor of the National Cemetery Lodge, was too small, did not have the proper climate control for collections, and had poor security, resulting in an occasional theft from the collection. Although field sites had previously been the main focus of interpretation, the character of visitation at the site had changed from descendents interested in seeing the battlefield their fathers or grandfathers fought on to those with a more historical interest in learning about the battle. The Park's museum had accepted a number

25 Project Construction Proposal Forms, dated March 7, 1957. Original in the National Archives, copy in the archives at Antietam National Battlefield. Doust approved the PCP on October 2, 1958.

26 "Scheetz, Wm. Cramp, Jr.," *American Architects Directory*, third edition (?: R.R. Bowker, 1970), 805, AIA Historical Directory of American Architects website, http://communities.aia.org/sites/hdoaa/wiki/Wiki Pages, viewed March 22, 2012; "Savery, Scheetz & Gilmour: A Finding Aid for Architectural Drawings and Photographs, 1909-1971 (bulk 1937-163), in the Architectural Archives, University of Pennsylvania (Philadelphia: Architectural Archives of the University of Pennsylvania, 2003), 2-3. Citation from Judith H. Robinson, Tim Kerr, and Janel Crist Kausner, "Mission 66-Era Visitor Centers, Administration Buildings, and Public Use Areas in the National Capital Region of the National Park Service," Multiple Property Documentation form, December 5, 2012, E23.

of artifact donations over the years, and Tilberg argued that the Park needed exhibits to educate visitors, including school children, on the battle and its importance.

Tilberg provided a rough sketch (figure 3-1) and description of the proposed program of the Visitor Center. On the first floor would be a lecture room of 36x40 feet with seating for 200 for viewing an orientation film and lectures for students, military groups, etc.; an exhibit room of 40x60 feet for exhibits telling the story of the battle, artifacts, and statistics; a lobby of 25x40 feet for an admission booth, sales booth and wall displays of other NPS service areas; an administrative wing of 40x40 feet for offices for the superintendent, secretary and historians, and a library. Comfort facilities, a laboratory, and storage were to be provided in a basement while an "observation platform" would be above the exhibit room to provide a panoramic view of the battlefield. The Park requested funds for the new building in the 1959 budget.[27]

Although Tilberg's sketch did not particularly resemble the final layout of the visitor center, a number of key elements that would appear in the final design were present, including the central lobby with separate office and exhibit/orientation wings, and an elevated observation room.

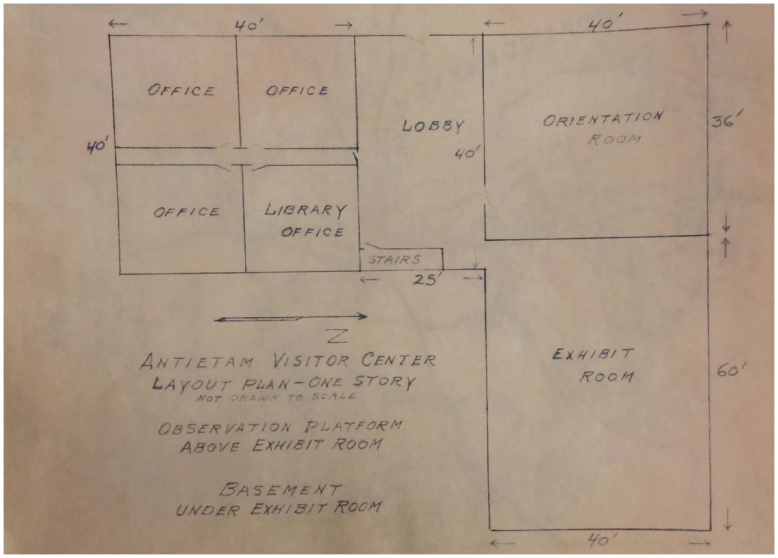


Figure 3-1: Tilberg's proposed layout of the new visitor center/ administration building (source: Frederick Tilberg, "Museum Prospectus: Antietam National Battlefield Site," July 31, 1957. Original in the National Archives, copy in the archives at Antietam National Battlefield)

27 Tilberg, "Museum Prospectus, *passim*. The report also lists the proposed exhibits.

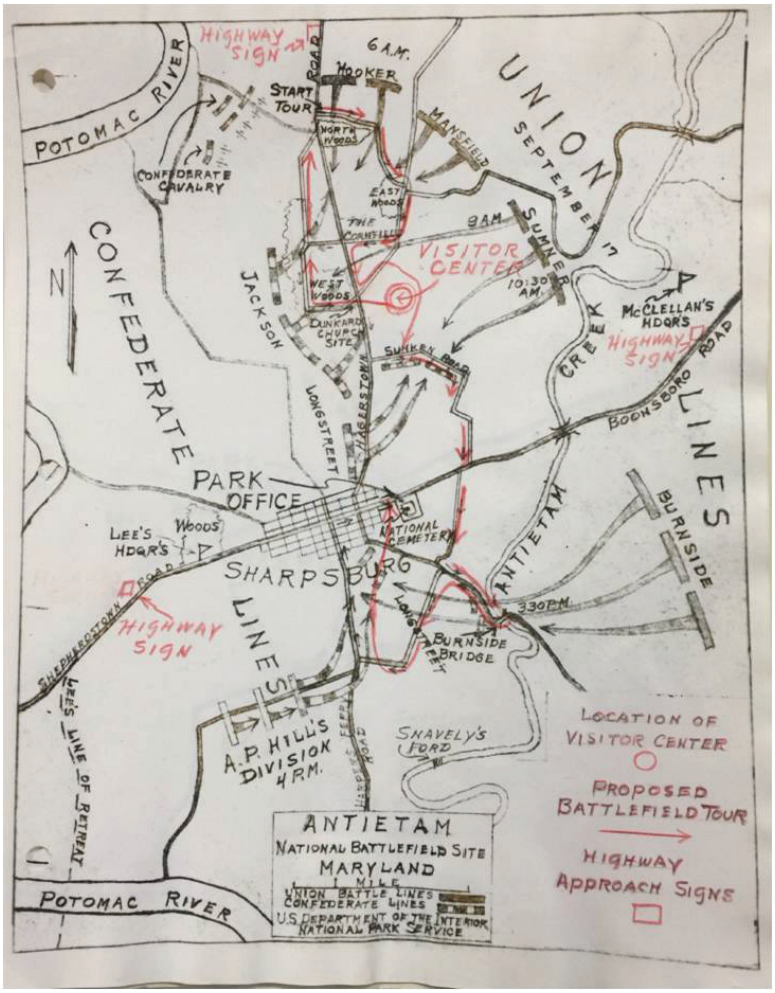


Figure 3-2: Proposed site plan for the visitor center and tour route (source: Frederick Tilberg, "Museum Prospectus: Antietam National Battlefield Site," July 31, 1957. Original in the National Archives, copy in the archives at Antietam National Battlefield).

There is little information in the sources regarding the development of the new building's design between Tilberg's prospectus and the final construction documents. An EODC rendering of an early proposed design was found in the Antietam National Battlefield archives (figure 3-3). Dated October 1958, it shows a rectangular main building with a paved plaza and two smaller buildings, possibly stand-alone restrooms. This was an approach taken at other NPS visitor centers (the visitor center at the Abraham Lincoln Birthplace National Historical Park, designed around the same time for the EODC, had a separate restroom building connected to the main building by a covered courtyard), but it is unknown why this approach was abandoned in favor of the present design or indeed how any specific design decisions were made.



Figure 3-3: Eastern Office of Design and Construction (EODC) rendering of an early proposal for the Antietam Visitor Center, dated October 1958 (source: Antietam National Battlefield archives).

While specifics on design development for the Antietam Visitor Center are not known, it is clear that the design observed many of the principles for visitor centers established by Mission 66. Its location was specifically chosen to provide visitors expansive views of the most important sections of the battlefield, giving visitors a sense of being close to the "field of action." Its location at the top of a hill allowed for a multi-level building that still appeared to be one story due to being set into the side of the hill. The design for the Visitor Center was firmly modern, with its low horizontal silhouette and simple open volumes. Visual interest was introduced by the use of local stone veneer for portions of the exterior, which also harmonized with the surrounding landscape and made the building less conspicuous.

Efficiency and circulation were also important parts of the design (figures 3-4 and 3-5). The interior plan was generally open, with key functions—museum, observation room, and restrooms—all opening off a central lobby. After entering the lobby, visitors could walk down a short flight of stairs to the museum and adjacent auditorium, or up another flight of stairs to the observation room, which provided a panoramic view of the battlefield through its large expanses of glass, while still appearing as a one-story, unobtrusive building from the exterior. Restrooms were also conveniently located off the lobby. Another key element was the integration of indoor and outdoor spaces. A flagstone terrace and walks surrounded the observation room with several exits from the room itself, providing for easy flow from the interior to exterior and vice versa. The overhanging sunscreen framing around the observation room, and originally over the main entry, also enhanced the sense of integration of interior and exterior, and

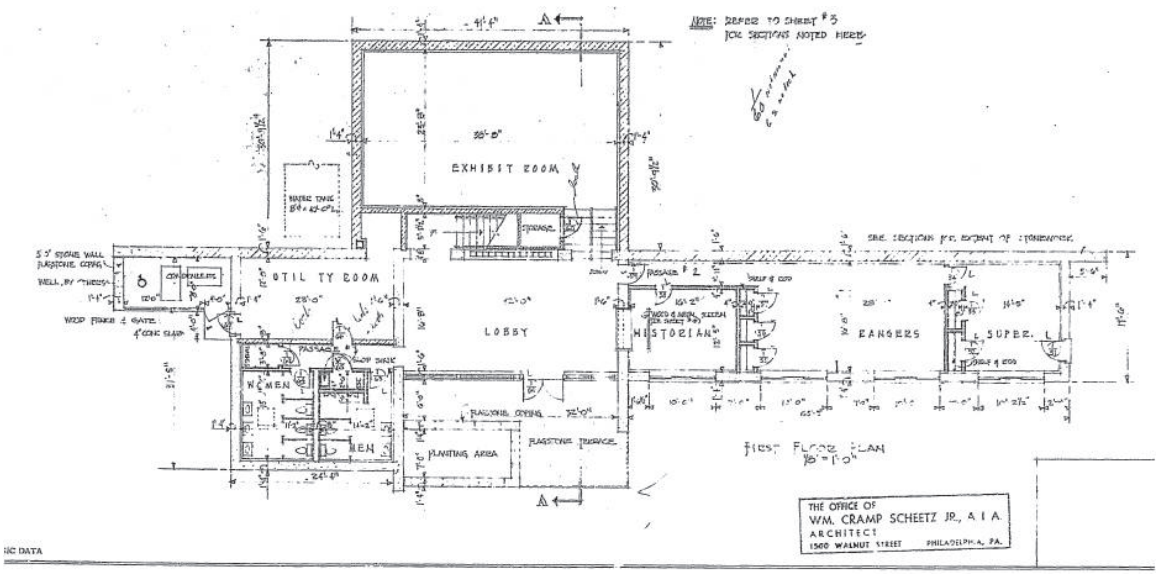


Figure 3-4: 1961 Visitor Center plan, first floor/lower level (source: Antietam National Battlefield archives).

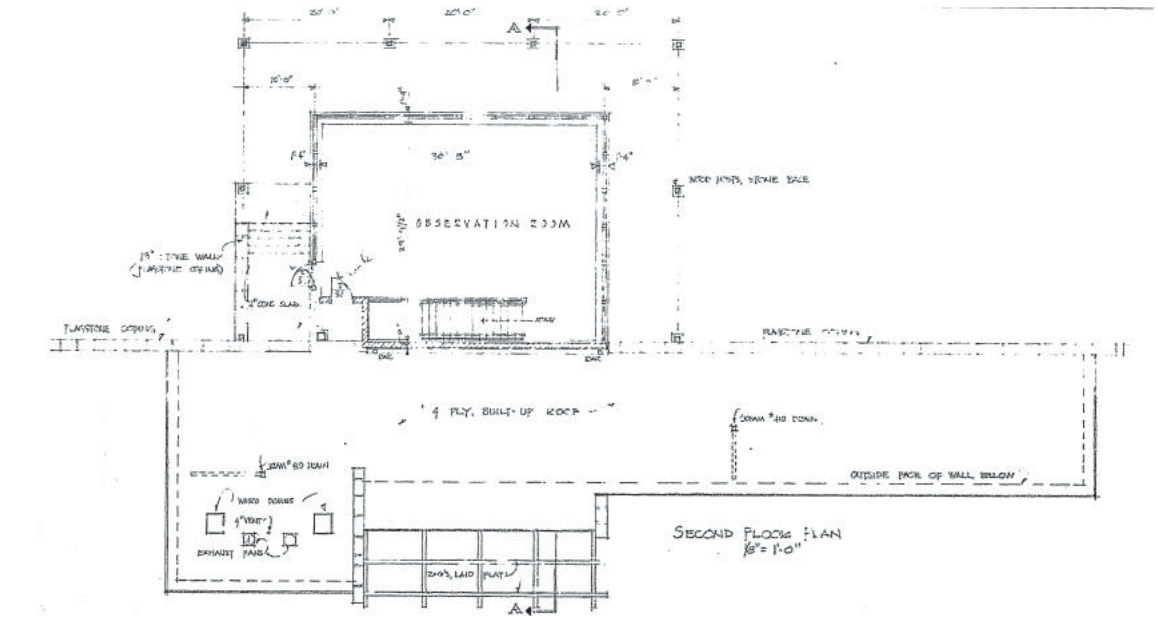


Figure 3-5: 1961 Visitor Center plan, observation room/roof level (source: Antietam National Battlefield archives).

provided welcome shading in the summer.[28] Enclosed offices for the superintendent, historian, and other staff were also located in a wing off the lobby, easily accessible for staff but still allowing for separation and privacy. A semi-circular parking lot allowed sixty-five cars to park close to to the visitor center.

28 This element is referred to with many different terms in the source documents, including sunscreen, pergola, trellis, shadow box framing, *brise soleil*, etc. Per consultation with NPS personnel, the term "sunscreen" is used for consistency throughout this document.

While both Tilberg and Doust had anticipated funding for the new Visitor Center in 1959, it was not until July 1961 (fiscal year 1962) that the federal budget included an appropriation for money to construct the new building. The reason for the delay is not recorded, but it could have been attributed to a number of reasons, including the ongoing design development and the usual bureaucratic delays attendant upon federal funding. One likely factor was the acquisition of land. Following the decision to locate the new visitor center near the New York Monument, NPS had identified a site on the crest and eastern slope of the hill just east of the New York Monument Plot (figure 3-6), but it was not yet owned by the NPS and could not be acquired until Congress authorized the NPS to purchase land, which did not happen until mid 1960. Following appropriations for the 1962 fiscal year, the first tract purchased under the Mission 66 land acquisition program at Antietam was 148.5 acres of the Spielman farm (historic Mumma farm), the land designated for the Visitor Center, in December 1961.[29]



Figure 3-6: An undated aerial view of the proposed Visitor Center site, looking northeast (middle right of photograph, east of the road and south of the New York Monument visible in the center of the picture) (source: Antietam National Battlefield archives).

In October 1961, while negotiations for purchasing the land were still underway, Antietam's new Superintendent, Benjamin H. Davis, issued a request for bids to construct the new Antietam Visitor Center. The construction schedule was ambitious, with completion anticipated by August 1962, less than ten months away. The Park

29 Trail, *Remembering Antietam*, 410-11.

was anxious to complete the building in time for the centennial of the Battle of Antietam. The bid proposal described the building as one story with a glass observation tower (room) over the main building, and to be constructed of native stone. The building dimensions were 125 feet long with a width varying from 20 to 60 feet, and it would house administrative offices, Park staff, a lobby, and exhibit room. The construction cost was estimated at $100,000 and the bid opening date was set for November 14. The current headquarters at the National Cemetery would be retained as a seasonal interpretive station.[30]

In late 1961, the NPS awarded the contract for constructing the Visitor Center to W. Harley Miller, Inc. of Martinsburg, West Virginia. Miller's was the lowest of six bids at $128,450, and included the drilling of a well to serve the building. Miller subcontracted the wood work, including wood-framed windows, millwork, and trim, to the Cavetown Planing Mill Company of Cavetown, Maryland. Other subcontractors included Rouzerville Fabricating and Welding Company of Waynesboro, Pennsylvania and the Montague-Betts Company of Lynchburg, Virginia. Work began on January 16, 1962, with completion now estimated for "late 1962."[31] However, after the well was drilled and the concrete footings poured, cold weather in March delayed progress on construction.[32] In the meantime, NPS awarded a $50,000 contract to Bester-Long, Inc. of Hagerstown (the lowest of eight bids) to construct entrance roads and parking areas at the Visitor Center and Burnside Bridge.[33]

In April-May of 1962, an addition was made to the design in the form of a fallout shelter, to be located in the basement south of the museum room (figure 3-7). This is an interesting addition so late in the design process, after construction had already begun. Fallout shelters, however, were a common feature of buildings during the Cold War-era. The addition of the fallout shelter to the Antietam Visitor Center was likely prompted by events in late 1961. In October, President John F. Kennedy had advised families to build fallout shelters to shield them in the event of nuclear war, and the following month Nelson Rockefeller, Edward Teller, and Herman Kahn proposed a network of concrete-lined underground fallout shelters across the United States in an issue of Fortune magazine. Since the Department of Defense was willing to contribute $39,500 to the construction budget

30 "Ask Bids for Visitor Center On Antietam Battlefield," *The Daily Mail* (Hagerstown, Maryland), October 27, 1961. Copy in the archives at Antietam National Battlefield.

31 "Work Begins on Battlefield Visitor Center," *The Daily Mail* (Hagerstown), January 18, 1962, 1; "To Build Center at Antietam Site," *The News* (Frederick, MD), January 31, 1962, 8.

32 "On This Knoll…" *The Morning Herald* (Hagerstown), March 15, 1962, 3.

33 "Bester-Long to Build Roads on Battlefield," *The Daily Mail* (Hagerstown), April 2, 1962, 23.

at Antietam to build the fallout shelter, the NPS likely saw this as an excellent opportunity to comply with national defense recommendations while also securing a space that could double as an auditorium, which had not been included in the original design. In October 1964, a local newspaper reported that Civil Defense authorities had stocked the fallout shelter, which was designed to protect 50 people, with provisions.[34]

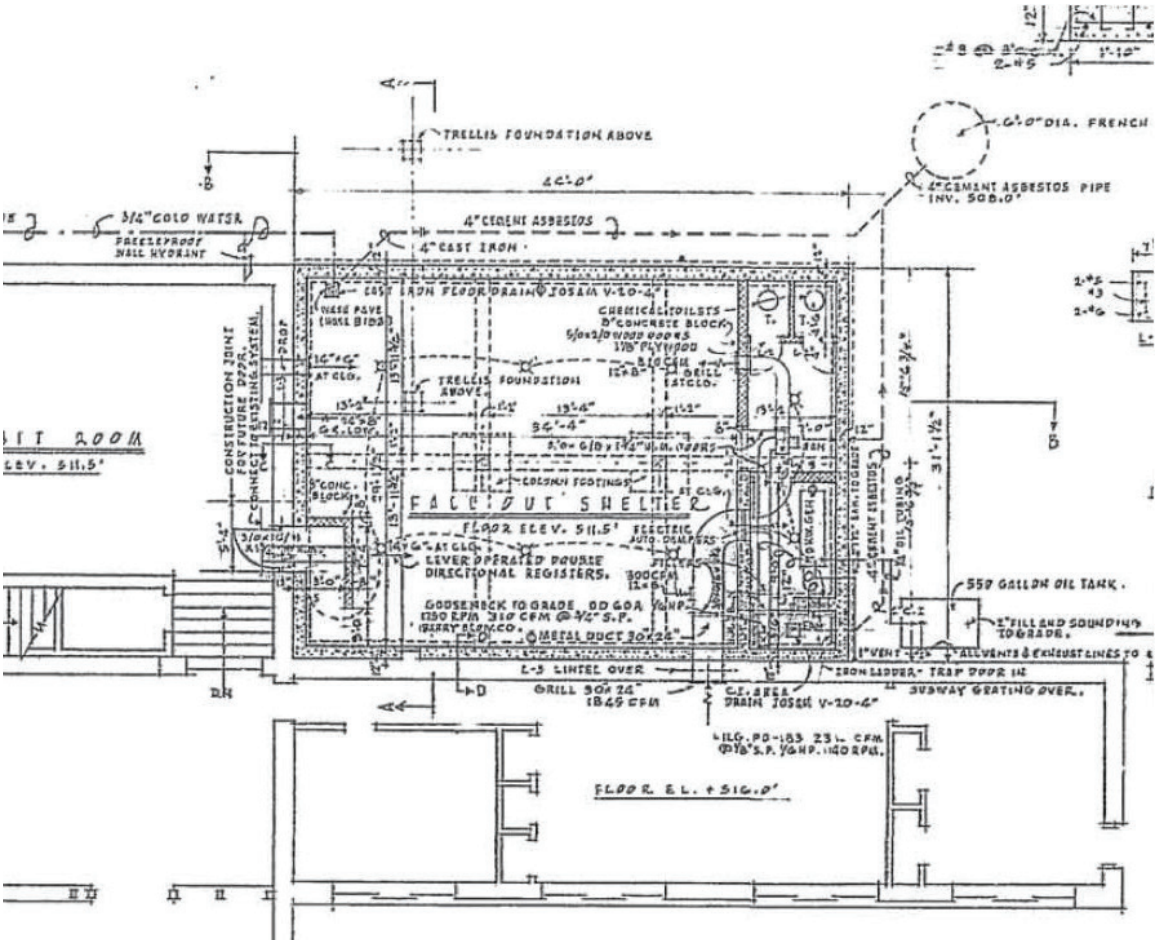


Figure 3-7: Detail of fallout shelter drawing, 1962 (source: Antietam National Battlefield archives).

Work resumed in May 1962 after the weather delays of early spring, and the walls began to rise above the basement level. Despite the delay, construction was still scheduled for completion in time for the centennial in September.[35] However, by August it was clear that the building would not be finished until at least

34 Snell and Brown, *Administrative History*, 334; "Visitor Center Addition," Drawings dated May 1962, in Antietam National Battlefield Archives. "Fallout Area at Antietam Now Stocked," *The Daily Mail* (Hagerstown), October 27, 1964, 9.

35 Photo Feature, *The Daily Mail* (Hagerstown), May 11, 1962, 15 (although a photograph was included with the article, the scan quality is poor and is not included in this chronology).

October. While Bester and Long finished work on the entrance road and parking area by the end of August, work on the building had only progressed to roughing in the observation room (figure 3-8). Even with the Visitor Center incomplete, the celebration would still go on, and in late August the NPS approved a work order to remove an iron and concrete fence and seed three acres around the building with common rye grass (at a cost of $275) to avoid having the site turn to mud in the event of rain during the re-enactment of the battle, scheduled for September.[36] Also in August, contractor Harley Miller objected that he was being required to haul additional dirt in for the project, while it had been his understanding that the NPS would furnish fill dirt. Following a meeting with Miller, Superintendent Davis, Ernie Malacarne of the EODC, Miller's superintendent Mr. Cogle, EODC Coordinating Architect Donald Nutt, and Warren Lewis, is was agreed that Lewis would modify the grading plan to use only the dirt then on site, in exchange for Miller foregoing any grievance or additional remuneration.[37]

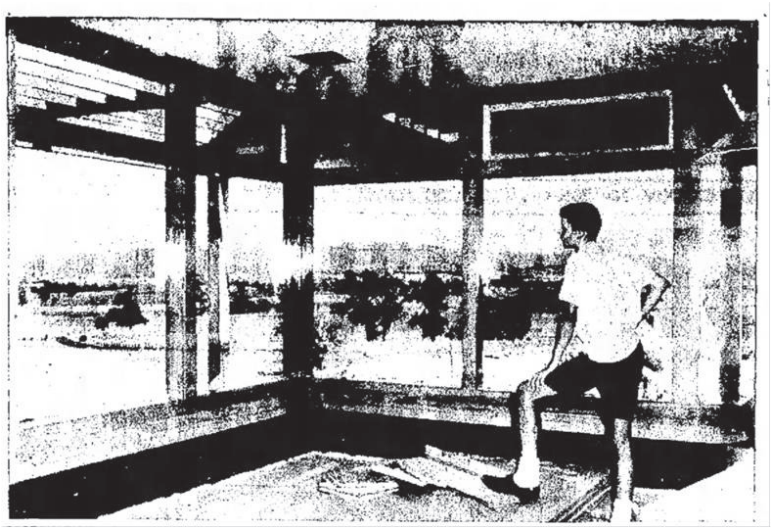


Figure 3-8: A man stands in the roughed-in observation room (source: scanned photograph from the Hagerstown Daily Mail, August 30, 1962, 2).

36 "History of Project" Chronology ca. October 1963. Copy held at Antietam National Battlefield Archives. The local contractors were Norman C. Klipp, Hagerstown, for removal of the iron and concrete fence; Southern States Hagerstown Cooperative for the grass seed, and Paul P. Spielman, Sharpsburg, for preparing the ground and sowing the seed; Photo Feature, *The Daily Mail* (Hagerstown), August 30, 1962, 2.

37 Ernie Malacarne, Letter to Robert E. Smith, Chief Architect, Eastern Office, Design and Construction, dated July 15, 1963. Copy in the archives at Antietam National Battlefield. Malacarne, who at that time was no longer with the NPS, wrote the letter in response to a request for additional compensation by Miller.

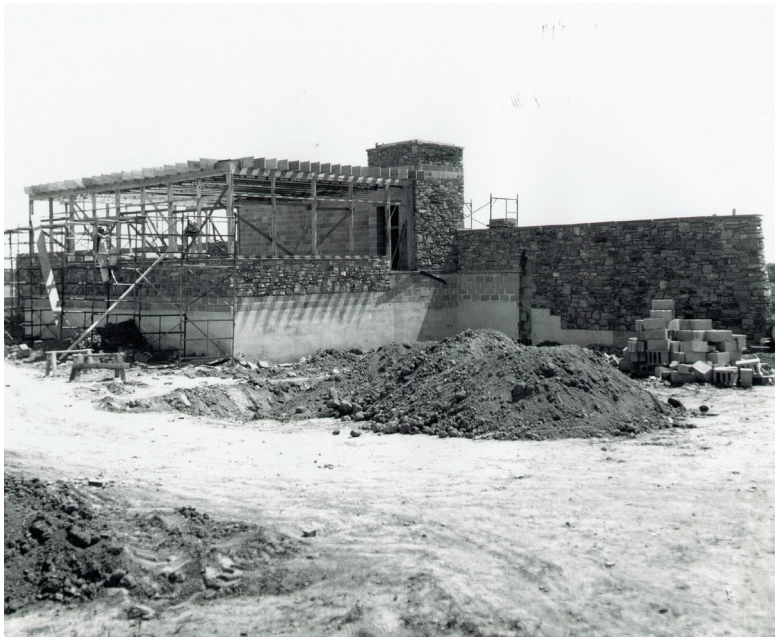


Figure 3-9: Visitor Center northeast elevation under construction, ca. 1962, showing foundation and upper walls, as well as area to be filled (source: Antietam National Battlefield archives, 212).



Figure 3-10: Administration/office wing under construction, looking northeast, ca. 1962 (source: Antietam National Battlefield archives 211).

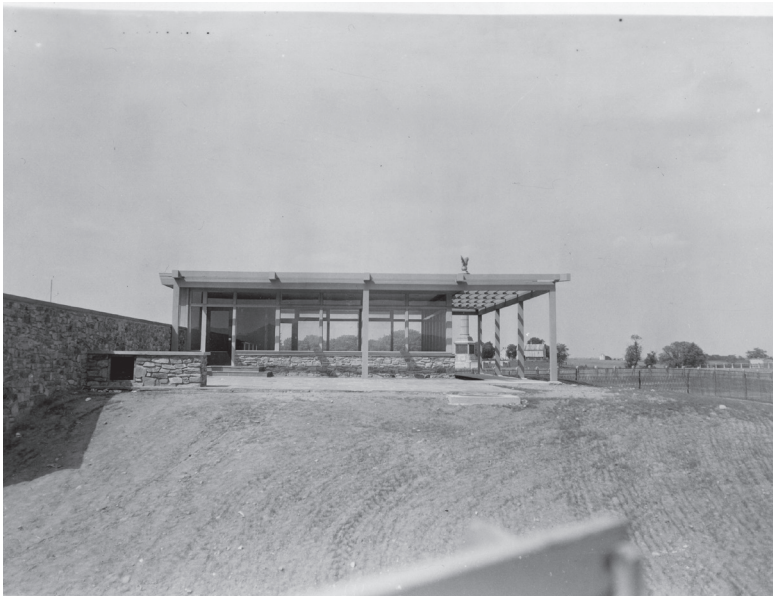


Figure 3-11: Visitor Center south of observation room, under construction, ca. 1962 (source: Antietam National Battlefield archives, 1962 014).



Figure 3-12: Visitor Center east elevation under construction, ca. 1962 (source: Antietam National Battlefield archives, 210).

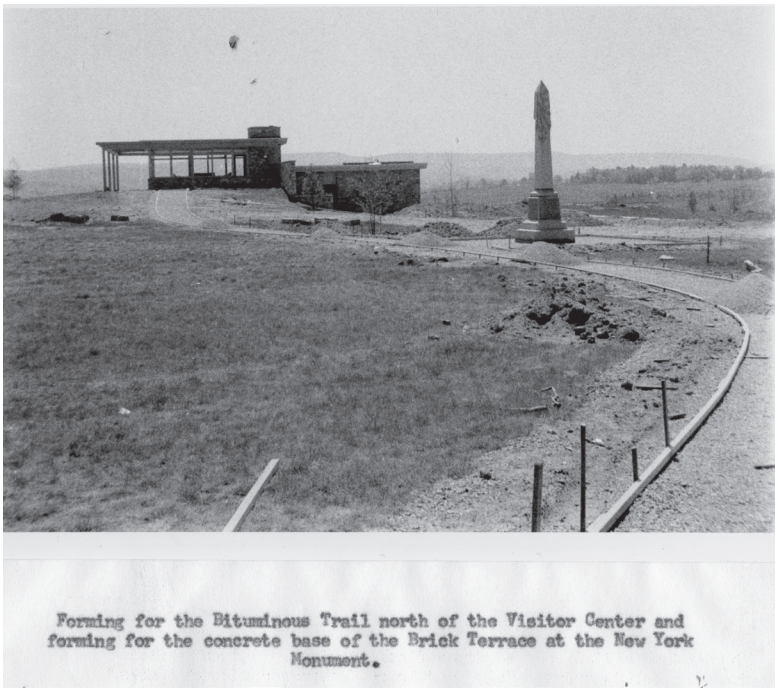


Figure 3-13: Visitor Center north elevation under construction, ca. 1962 (source: Antietam National Battlefield archives).

Although the building was not expected to open until the beginning of 1963, NPS architects Donald Nutt and Frank Petrillo inspected and accepted the completed Antietam Visitor Center on October 10, 1962, less than a year after bids were solicited.[38] With construction nearly completed, the focus turned to furnishing the interior. In November, Donald Nutt of the EODC sent the furnishings plan for the new Visitor Center to the Regional Director of the Northeast Region. The estimated cost was $3,609.04, with an allowance of $250 for shipping. The furnishings plan (figures 3-14 and 3-15) included pieces by now iconic mid-century Modern designers including settees, sofas, and chairs by Jens Risom; chairs by Herman Miller; chairs, benches, and tables by Knoll Associates; and planters by Architectural Pottery. Plants recommended for the planters included Aglaonema Robelinii (Chinese Evergreen), Saxifrage sarmentosa, Magic Carpet Variety (Strawberry Geranium), and Dracaena Warnickii. Other furnishings included a Connotex-style wool rug in Milano blue tweed, rubber coated jute and hair carpet cushions, and amber-colored ash trays for the tables in the lobby and observation room. The curtain in the audio-visual room was specified as “Prisma,” a red linen printed fabric by Knoll Textiles.”[39] The furnishings plan, with a floor plan, hand sketches

38 L. S. McWilliams, “National Park Architects Accept Antietam Building,” *The Morning Herald* (Hagerstown), October 12, 1962, 17.

39 Donald S. Nutt, EODC, memorandum and furnishings plan to Regional Director, Northeast Region, dated November 7, 1962. Plan in Antietam National Battlefield Archives.

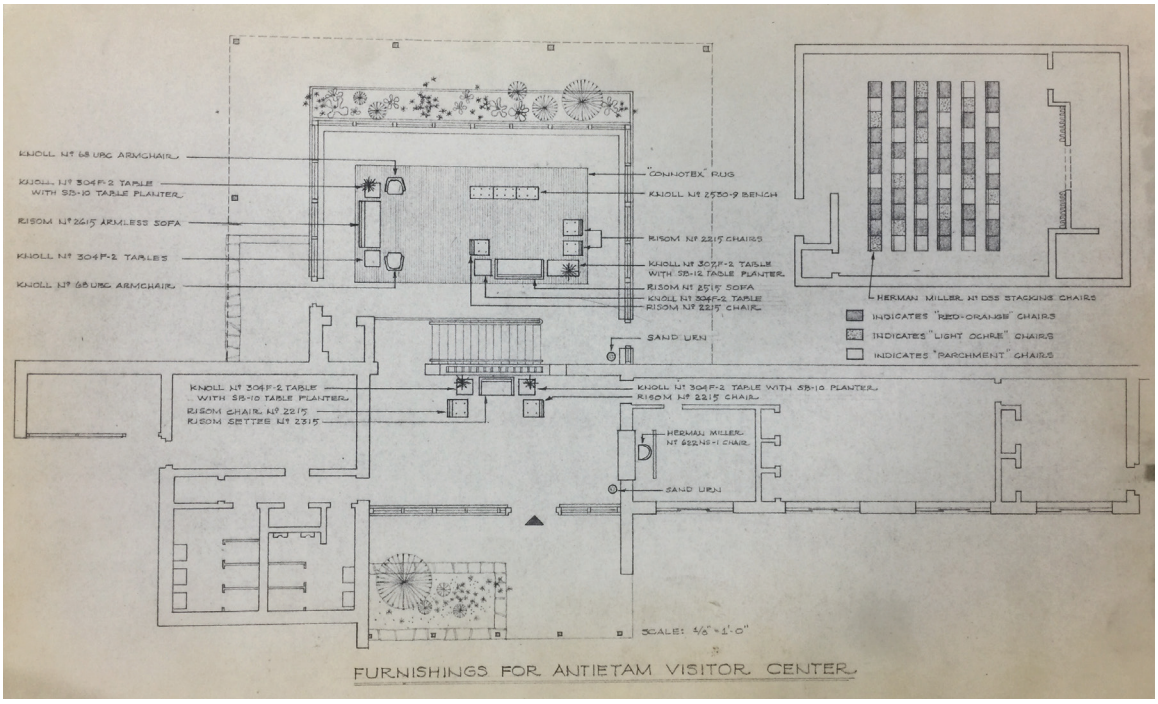


Figure 3-14: Visitor center floor plan with furnishings, ca. 1962 (source: Antietam National Battlefield archives).

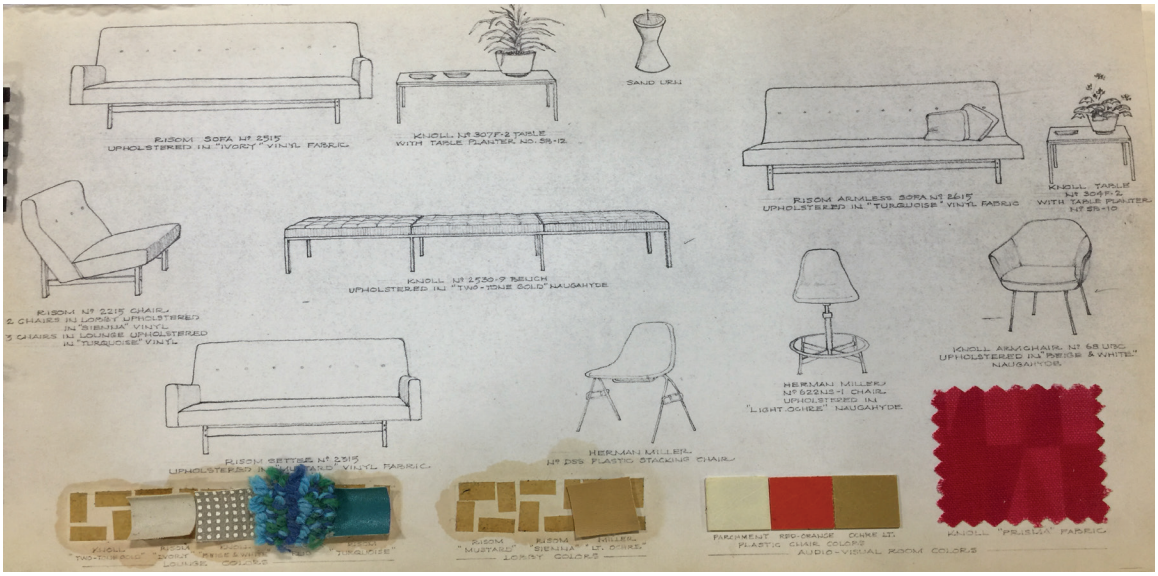


Figure 3-15: Detail of furnishings plan with sketches of furniture and remnants of fabric samples, ca. 1962 (source: Antietam National Battlefield archives).

of each piece, and some fabric samples, still survives in the Antietam National Battlefield archives.

It appears from both the furnishings plan and the 1961 drawings that the original intention was for the lobby to be circulation/ lounge space only. A rectangular opening was built into the south

wall of the lobby, with space for a staff member to sit behind a wood counter, screened from the rest of the historian's office by a free-standing wood and metal screen (figures 3-16 and 3-17). On the east wall of the lobby, the furnishings plan shows a grouping of two chairs, a settee, and two side tables with planters, in front of an open wooden screen dividing the lobby from the stairs. This was the only installation/furnishings in the lobby.

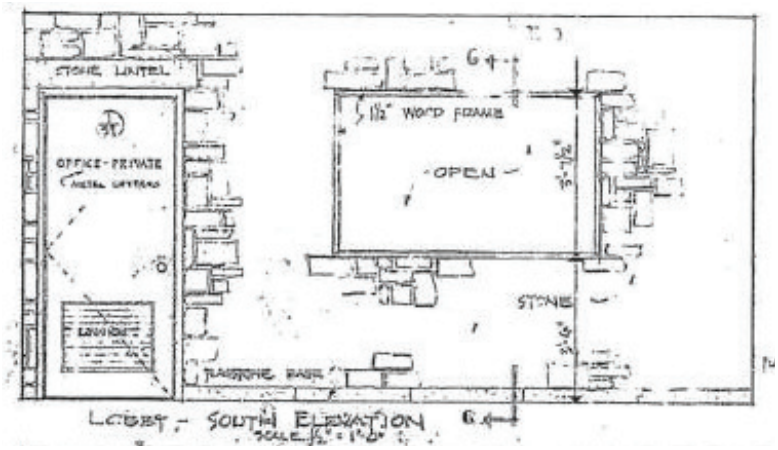


Figure 3-16: Detail of lobby south elevation from 1961 plans (source: Antietam National Battlefield archives).



Figure 3-17: Lobby south elevation, photo dated 1967 (source: Antietam National Battlefield archives (P)16A12).

The new Visitor Center opened to the public in January 1963, and the next month the new museum exhibits were installed, comprising 32 wall panels and display cases. At around this time, Robert Lagemann was appointed as acting Superintendent after the transfer of former Superintendent Ben Davis to another

park.[40] With the building completed and open for business, work turned to finishing the landscaping and grounds. The EODC approved planting plans and specifications for site work in January 1963, and awarded the contract to the low bidder (at $15,897.03), Treeland Nurseries of Frederick, Maryland, in late February. The work included not only planting and seeding around the Visitor Center, but also at the Burnside Bridge area. The contract also included the purchase of fiberglass planters fabricated by Architectural Pottery. While work had to be suspended from May 28 to October 17 due to another contract in progress, all the work was completed and accepted by the end of October, 1963.[41]

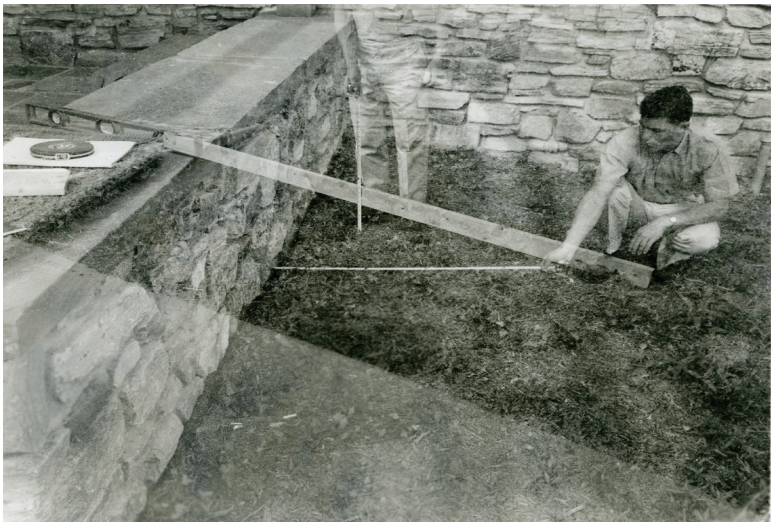


Figure 3-18: Landscape work under construction, ca. 1963 (source: Antietam National Battlefield archives, ANTI(P)18B100).



Figure 3-19: Visitor Center from the north, 1963 (source: Antietam National Battlefield archives 240).

40 "Many New Exhibits Feature Battlefield Visitor Center," *The Daily Mail* (Hagerstown), February 13, 1963, 22. Harold Lessem was appointed Superintendent in September 1963.

41 Composition of Cost for Completion Report and Narrative Report, Grounds Development for Visitor Center at Antietam National Battlefield, report ca. October 1963; "History of Project" Chronology ca.



Figure 3-20: Completed Visitor Center from the northwest, 1963 (source: Report on Completion of Grounds Work, Antietam National Battlefield archives).



Figure 3-21: Visitor Center from the northeast, 1963 (source: Report on Completion of Grounds Work, Antietam National Battlefield archives).



Figure 3-22: Planters at entrance, 1963 (source: Report on Completion of Grounds Work, Antietam National Battlefield archives).



Figure 3-23: Visitor Center entry, 1963 (source: Antietam National Battlefield archives 241).



Figure 3-24: Planters at observation room terrace, 1963 (source: Report on Completion of Grounds Work, Antietam National Battlefield archives).



Figure 3-25: Detail of plantings on the northwest corner of the Visitor Center (source: Report on Completion of Grounds Work, Antietam National Battlefield archives).



Figure 3-26: Visitor Center from the north, ca. 1963 (source: Antietam National Battlefield archives, 242).

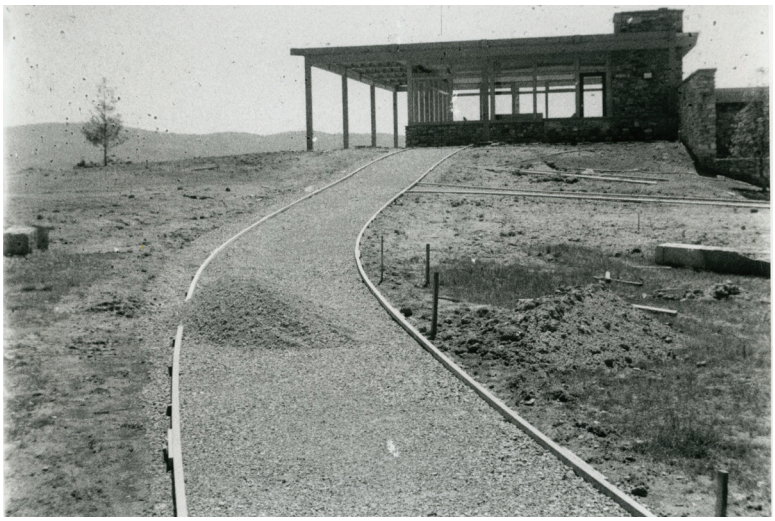


Figure 3-27: Walkway to north terrace entry, December 1963 (source: Antietam National Battlefield archives, ANTI(P)18B101).

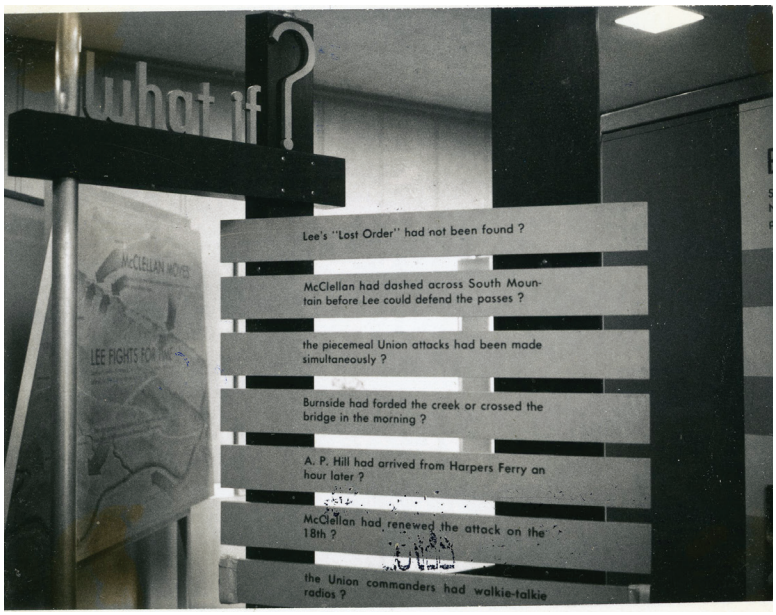


Figure 3-28: Exhibit in the Visitor Center, 1963 (source: Antietam National Battlefield archives (P)08B46).

After several months' occupation and use of the Visitor Center, a number of deficiencies became apparent, and Harold Lessem, the new Superintendent of Antietam, met with contractor W. Harley Miller to discuss the problems in late 1963. These included the failure of the water tank, ponding water on the roof and roof leaks, and Miller's claim that he was owed additional money for hauling fill to the site.

The 15,000 gallon underground water tank had ruptured sometime prior to August 1963. Miller pointed out that the tank was supplied in conformance with the specifications and that the shop drawings were submitted and approved. However, following the "accelerated program" to add the fallout shelter to the contract, the finish grade and height of the masonry manholes at the top of the tank were raised. The increased load had caused the failure of the tank, and the NPS agreed that this was not Miller's fault. The EODC later assisted the Park in designing a replacement system, which consisted of installing two water tanks in the utility room.[42]

Miller did not fare as well in his claim for additional compensation ($1,784.34) for hauling in fill dirt. NPS documented that Miller had expressed satisfaction with the solution proposed during the meeting in August 1962 (cited above) and during the final inspection meeting. This claim was dismissed in March 1964.[43]

Miller was required to address the issues with roof drainage. Superintendent Lessem reported that following a "steady, prolonged, wind-driven rain," ponding was occurring on the roof of the Visitor Center and failing to exit the roof through drains or scuppers; it was instead being blown off the roof by the rain (figures 3-29 and 3-30). The roof also leaked water into the building along the common wall between the museum room and auditorium, causing puddles on the floors of both rooms. Lessem could not trace the source of the water but possible avenues included the flagstone terrace over the auditorium, the ivy bed bordering the west side of the observation room, or the large open hole excavated for inspecting the ruptured tank. The sides

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October 1963. Copies held at Antietam National Battlefield Archives. The work of the other contract was not identified.

42 Robert G. Hall, Chief, EODC, memorandum to Regional Director, Northeast Region, dated November 14, 1963; A. W. Franzen, Architect, Harpers Ferry, memorandum to Chief, EODC, not dated but circa December 10, 1963; Harold Lessem, Superintendent, Antietam National Battlefield, to Regional Director, Northeast Region, dated December 10, 1963. All copies held in archives of Antietam National Battlefield; Snell and Brown, *Administrative History*, 337.

43 Harold L. Lessem, Superintendent, memorandum to Regional Director, Northeast Region, dated November 6, 1963. Robert G. Hall, Chief, EODC (signed by H. Reese Smith), memorandum to Regional Director, Northeast Region, dated March 6, 1964. Both copies held in Antietam National Battlefield archives.

of that hole were also sliding and threatening the stone wall on the north side of the Visitor Center.[44]

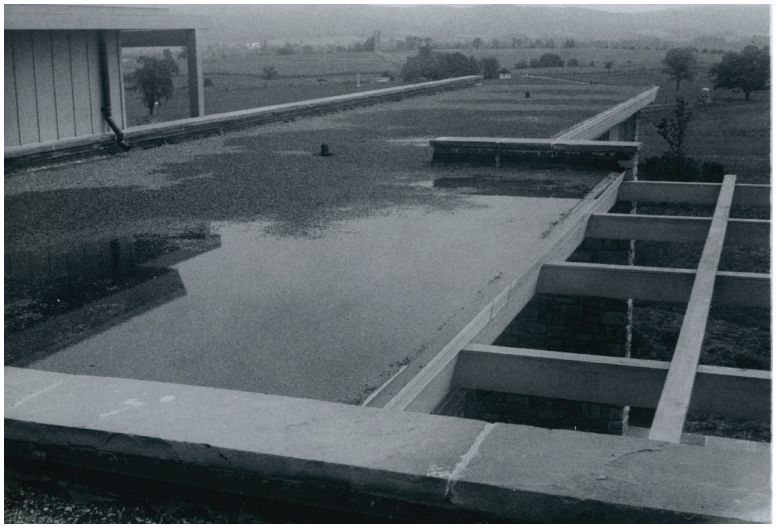


Figure 3-29: Photo taken to document ponding on Visitor Center roof, August 1963. The caption read "rain water pool, undrained; front edge of roof, where water pours over onto persons entering or leaving the Visitor Center (source: Antietam National Battlefield archives (P)05D06 (1)).



Figure 3-30: Photo taken to document ponding on Visitor Center roof, August 1963. The caption read "Showing back water from rain; on roof just behind (and above) main entrance" (source: Antietam National Battlefield archives (P)05D05 (1)).

44 Harold L. Lessem, Superintendent, memorandum to Regional Director, Northeast Region, dated November 8, 1963. Copy in the archives at Antietam National Battlefield.

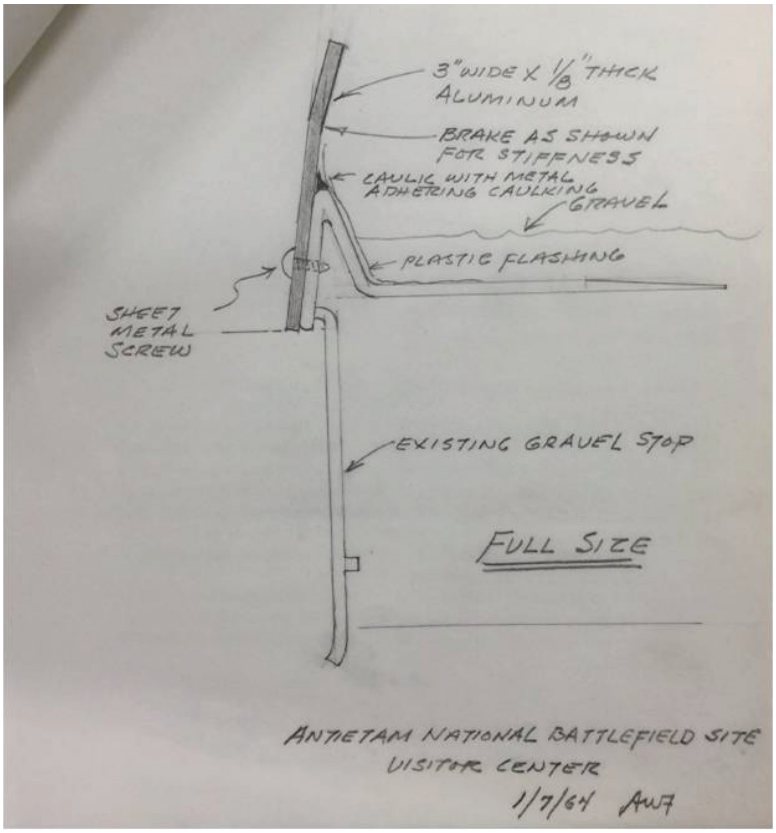


Figure 3-31: Sketch of recommended gravel stop assembly to correct ponding on roof (source: George A. Palmer, Regional Director, Northeast Region, memorandum to Superintendent, Antietam National Battlefield, dated January 2, 1964. Copy held in Antietam National Battlefield archives).

Following further inspection by NPS architects and Miller, it was determined that rain water was blowing over the gravel stop at the edge of the roof. Miller identified three potential factors: 1) possible deflection in the wood supporting beam running beneath the roof edge; 2) the downspout of the upper roof spilling water toward the ponding location (near the front entry); 3) the height of the gravel stop. Miller noted that the specified gravel stop was for a vertical fascia, but the design was for a sloping fascia. During installation, the contractor had to adapt to this because the gravel stop was an extrusion and could not be bent to fit a flat roof and sloping fascia board. Miller proposed applying an aluminum strip with sheet metal screws and caulking to raise the stop edge 1” to prevent water blowing over the edge (figure 3-31). Miller initially agreed to perform the work at the main entrance for no charge in exchange for compensation for the additional fill around the fallout shelter and not being held responsible for the water tank collapse. In early 1964, NPS agreed to absolve Miller of blame for the water tank collapse, but did not accept his claim for additional compensation for fill, as noted above. Miller did eventually install the aluminum gravel stop over the entrance.

NPS architects did not feel this would constitute a “definitive solution” but felt there was a lack of tangible evidence that the contractor had failed to follow specifications or had performed shoddy work. The Regional Director recommended that ½” of freeboard be maintained above the lip of the roof drain when this work was completed.[45]



Figure 3-32: View southeast from Visitor Center with terrace and planters in the foreground, 1964 (source: Antietam National Battlefield archives, 023).



Figure 3-33: Southwest corner of Visitor Center, 1964 (source: Antietam National Battlefield archives, ANTI(P)16A44).

45 A. W. Franzen, Architect, Harpers Ferry, memorandum to Chief, EODC, not dated but circa December 10, 1963; Harold Lessem, Superintendent, Antietam National Battlefield, to Regional Director, Northeast Region, dated December 10, 1963; George A. Palmer, Regional Director, Northeast Region, memorandum to Superintendent, Antietam National Battlefield, dated January 2, 1964. All copies held in archives of Antietam National Battlefield.



Figure 3-34: Exhibit area, 1964 (source: Antietam National Battlefield archives, ANTI(P)08B50).



Figure 3-35: Exhibit area, ca. 1964 (source: Antietam National Battlefield archives ANTI(P)08B92).



Figure 3-36: Historian's office, looking west 1964 (source: Antietam National Battlefield archives, ANTI(P)08B61).



Figure 3-37: Superintendent's office, looking southwest, 1964 (source: Antietam National Battlefield archives, ANTI(P)08B57).



Figure 3-38: Park Library in Historian/Interpreters office, 1964 (source: Antietam National Battlefield archives).

Alterations and Additions to the Visitor Center, 1965 to present

While the Visitor Center met the goals of the Mission 66 program for Antietam, steadily increasing visitor numbers and other changes in needs resulted in alterations to the design over the years. In the years immediately following the Visitor Center's construction and opening, a number of adjustments were made as staff settled into the building and visitors began to use it. One early change was the relocation of the drinking fountain, which had originally been located in the corridor to the restrooms. Superintendent Lessem indicated that this had become "an acute visitor hazard" (in what way is not recorded) and it was removed and replaced with a wall-type fountain installed on the north wall of the lobby.[46]

In 1965, there appeared to be some discussion over use of the observation room. A complaint had been made (original complaint not found) of the "cluttered" appearance of the observation room, apparently due to temporary devices being used for interpretation in lieu of an audiovisual program. Superintendent Lessem noted that the clutter would be relieved when the audiovisual program was installed. It is unclear what sort of program this was and why it was not being used in the auditorium/fallout shelter. Lessem's memorandum also seems to suggest that the interpretive program for the observation room was not complete. After noting that the observation room was a "superb" facility and its chief function

46 Snell and Brown, *Administrative History*, 344.

was to allow visitors who have already been "properly oriented and informed" to "relate their knowledge of the Battle to the significant landmarks" visible from the room, Lessem reminded the Regional Director that there was an agreement in 1964 that the "superlative qualities" of the observation room "merited an original, different interpretive treatment" and Lessem was concerned that the suggestions so far were for "standard interpretive devices." Lessem hoped for "something new, daring, and spectacular."[47] A meeting was held in March to discuss ideas, but no record was made of any action.[48]

The situation continued, much to the Superintendent's frustration, into the following year. Finally, in September 1966, the audiovisual slide program was installed. According to the superintendent's monthly report, audience reaction was mixed. "The average visitor tends to respond favorably; the Civil War buff tends to be critical of both the script and the graphic material." The park trusted that the revised audio portion would be delivered in the near future. "The amount of electronic gadgetry to operate the show is amazing and it already has been necessary for Jack Kozel to adjust and correct the system."[49]

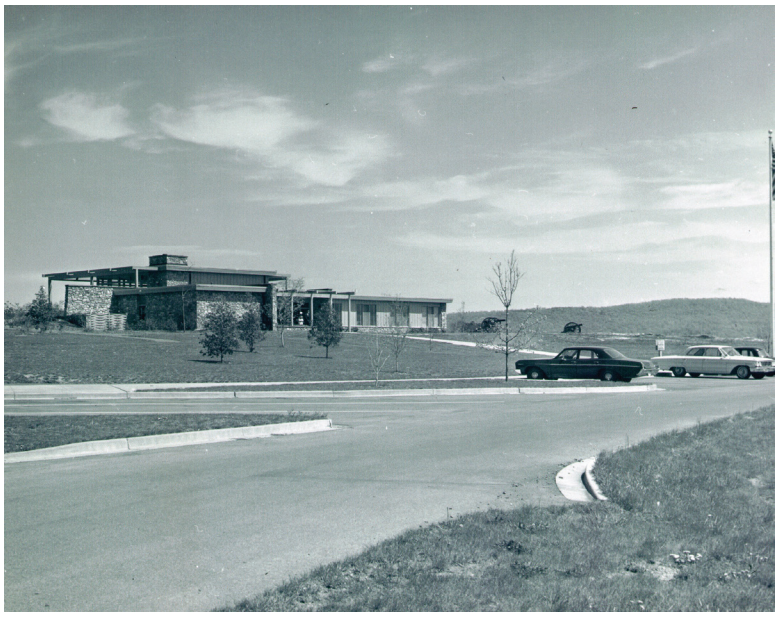


Figure 3-39: Visitor Center and parking lot from the northwest, ca 1965 (source: Antietam National Battlefield archives, 213).

47 Harold Lessem, Supintendent, memorandum to Regional Director, Northeast Region, dated March 16, 1965. Copy held in Antietam National Battlefield Archives.

48 Snell and Brown, *Administrative History*, 357-360.

49 Superintendent's Monthly Report, 8 April 1966 and Superintendent's Monthly Report, 4 October 1966, both in Record Group 79, Entry 11, Box 80, National Archives and Records Administration, College Park, Maryland. Citations provided by Patricia Babin, NCRO.

In April 1966, deficiencies were identified in the air conditioning system in the Visitor Center and the systems were revised (details on the deficiencies were not identified in the source documents).[50]



Figure 3-40: Visitor Center from the west, 1965 (source: Antietam National Battlefield archives, ANTI(P)16A52).

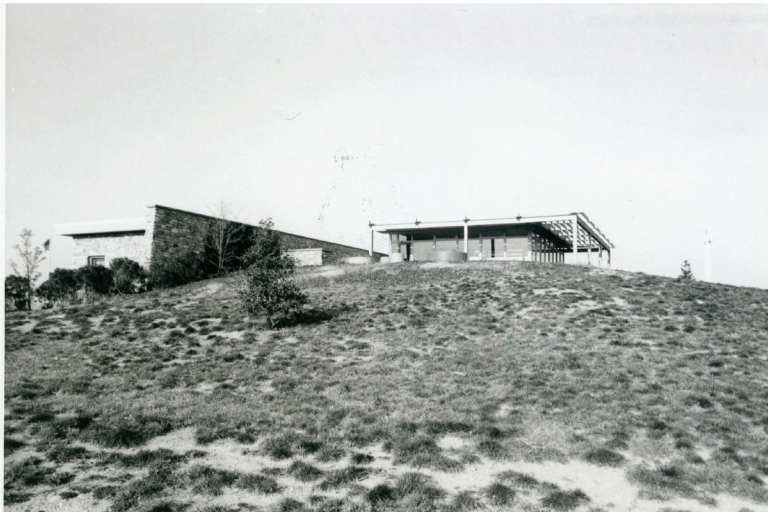


Figure 3-41: Visitor Center from the south, 1965 (source: Antietam National Battlefield archives, ANTI(P)16A53a).

50 Snell and Brown, *Administrative History*, 356; "Revisions to Air Conditioning System," Drawings dated April 1966 at Antietam National Battlefield Archives.



Figure 3-42: West elevation, ca. 1966 (source: Antietam National Battlefield archives, 026).



Figure 3-43: View from the southwest, ca. 1966 (source: Antietam National Battlefield archives, 027).



Figure 3-44: West elevation, ca. 1966 (source: Antietam National Battlefield archives, ANTI(P)16A55).



Figure 3-45: Main entry and planter, ca. 1966 (source: Antietam National Battlefield archives, ANTI(P)16A54).



Figure 3-46: Planters and benches south of observation room, ca. 1966 (source: Antietam National Battlefield archives, 021).

Maintenance issues continued to plague the building in 1967. Antietam staff had noticed water infiltration along the wall dividing the assembly room (fallout shelter) from the exhibit room. In July, an architect from the Regional Office, Division of Maintenance, a landscape architect and project supervisor from the Office of Design and Construction, PSC, and members of the Antietam staff met to discuss several maintenance issues at the site, including the water infiltration in the basement. As the wall was directly beneath the exterior wall at the south side of the observation room, adjacent to the terrace, it was suspected that the terrace was leaking. Some flagstones when sounded had a hollow sound, suggesting deterioration of the setting bed. Other possible contributing factors included perforation of

the membrane waterproofing on top of the concrete slab and improper pitch of the terrace which allowed water to collect in the corner near the wall. The team recommended removing the flagstones, applying a layer of mortar to pitch the drainage away from the wall, installing a new membrane, and re-laying the flagstones in a new bed of mortar. As an interim treatment, a clear waterproofing agent could be applied to the terrace. The report noted that the latter treatment ("Hydrozo") was applied and appeared to be successful after a heavy rain.[51]



Figure 3-47: Image looking at south wall of observation room from main roof, 1967 (source: Antietam National Battlefield archives, ANTI(P)05C02).



Figure 3-48: View of terrace from the south, 1967 (source: Antietam National Battlefield archives, ANTI(P)05C07).

51 Regional Architect, Division of Maintenance, Trip Report sent to Regional Director, Northeast Region, dated July 11, 1967. Copy held at Antietam National Battlefield Archives.



Figure 3-49: View of terrace and planters from the southeast, 1967 (source: Antietam National Battlefield archives, ANTI(P)05C09).

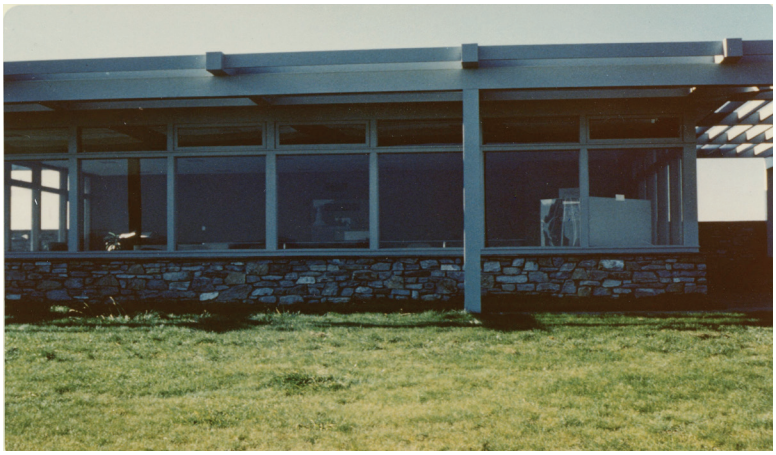


Figure 3-50: East wall of observation room, 1967 (source: Antietam National Battlefield archives, ANTI(P)05C10).

Also in 1967, the administrative staffs of Antietam and the Chesapeake and Ohio Canal merged. At that time, the auditorium space in the fallout shelter (adjacent to the basement museum) was converted to offices, and the audiovisual program moved up to the observation room. This was not an ideal location, especially as it required the installation of curtains over the windows to darken the room sufficiently.[52]

52 Snell and Brown, *Administrative History*, 390.



Figure 3-51: Observation room looking northwest, 1967 (fade in original) (source: Antietam National Battlefield archives, ANTI(P)16A13).

A series of photographs from September 1972 marked "painted" on the back suggests that the exterior wood had recently been painted (figures 3-52 to 3-54). In October, work was underway on the terrace west of the observation room. No information was found on the scope of work, but the legend on the back of some of the photos ("flagstone") suggests this may have been the reconstruction of the terrace recommended in 1967 to alleviate leaking below (the Superintendent's Report for 1971 refers to the installation of a drainage system at the Visitor Center "to prevent seepage into basement").[53] While it is not clear from earlier photographs, it also seems that the west flagstone walk was expanded to sit underneath the posts holding up the west sunscreen, possibly to reduce rotting of the post bottoms.



Figure 3-52: Northwest corner, September 1972 (source: Antietam National Battlefield archives, ANTI(P)18B336).

53 Snell and Brown, *Administrative History*, 404.



Figure 3-53: Administrative office wing, west elevation, September 1972 (source: Antietam National Battlefield archives, ANTI(P)18B323). This image was not labeled but it is similar to other photographs from the series and was taken before plantings were installed in front of the wing in 1973.

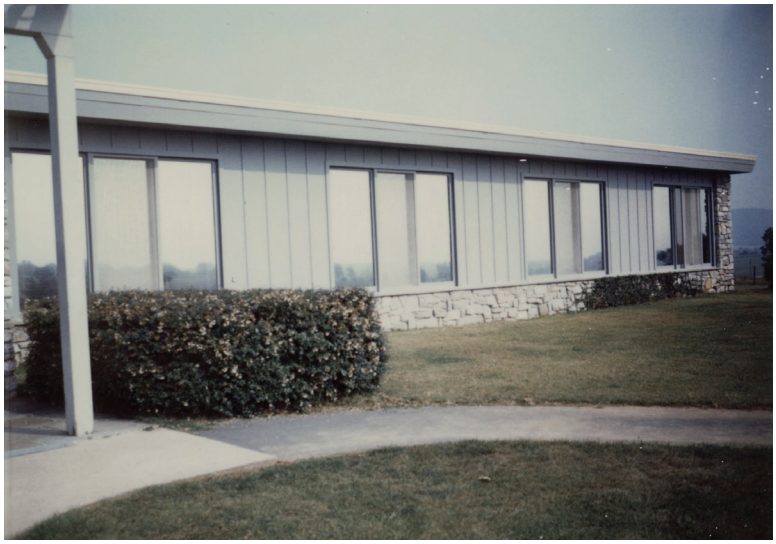


Figure 3-54: Administrative office wing, west elevation, September 1972 (source: Antietam National Battlefield archives, ANTI(P)18B337).



Figure 3-55: Terrace looking northwest, labeled "flagstone," October 25, 1972 (source: Antietam National Battlefield archives, ANTI(P)18B315).



Figure 3-56: Flagstone walk looking north, October 25, 1972 (source: Antietam National Battlefield archives, ANTI(P)18B342).



Figure 3-57: Terrace looking northwest, October 26, 1972 (source: Antietam National Battlefield archives, ANTI(P)18B334).



Figure 3-58: Flagstone walk looking north, October 26, 1972 (source: Antietam National Battlefield archives, ANTI(P)18B341).



Figure 3-59: Terrace looking north, October 26, 1972 (source: Antietam National Battlefield archives, ANTI(P)18B331).



Figure 3-60: Flagstone walk and ramp to observation room level, looking west, October 26, 1972 (source: Antietam National Battlefield archives, ANTI(P)18B30).

It appears that by 1972, a number of changes had been made to the lobby and office area. A photograph dated that year (figure 3-61) shows that the information counter on the south wall of the lobby had been infilled with field stone and a new desk installed on the east wall of the lobby, along with flanking information kiosks. This may have been done to recapture the original information counter space for office space, given the addition of the C&O staff. A long bench was present along the west wall of

the lobby to the north of the door, and possibly some individual seats south of the door.

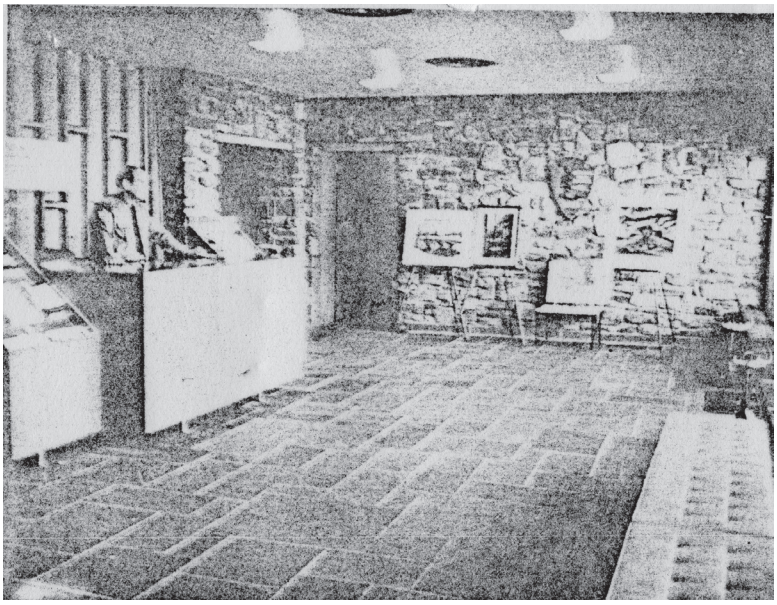


Figure 3-61: Lobby looking south, with information window filled in, ca. 1972 (source: Antietam National Battlefield archives, 208).

It is also likely that the open divider wall between the stair and lobby was covered over on the stair side during this year, as one image dated 1972 shows it open (figure 3-62), while a second shows it covered (figure 3-61). It seems likely that this was done to protect staff at the new information desk, who now had their backs to the stair.



Figure 3-62: Lobby looking northeast, with divider wall open, dated 1972 (source: Antietam National Battlefield archives, 209).



Figure 3-63: Lobby looking northeast, undated but circa early 1970s (source: Antietam National Battlefield archives, ANTI(P)18B355; blur in original).

Even with these changes, the lobby space was still inadequate. In November 1972, the Superintendent altered a previous request to replace the rotting sunscreen around the Visitor Center with a request to expand the lobby. He noted that the current lobby space was cramped and expansion would provide for an enlarged sales desk and more interpretive display space, as well as more room in general, as the lobby was "crowded beyond belief" all during the summer and on spring and fall weekends. He proposed moving the front glass wall forward 18 feet and enclosing the space (figure 3-64). The expected cost was $11,000 with the work to be done by in-house staff in the

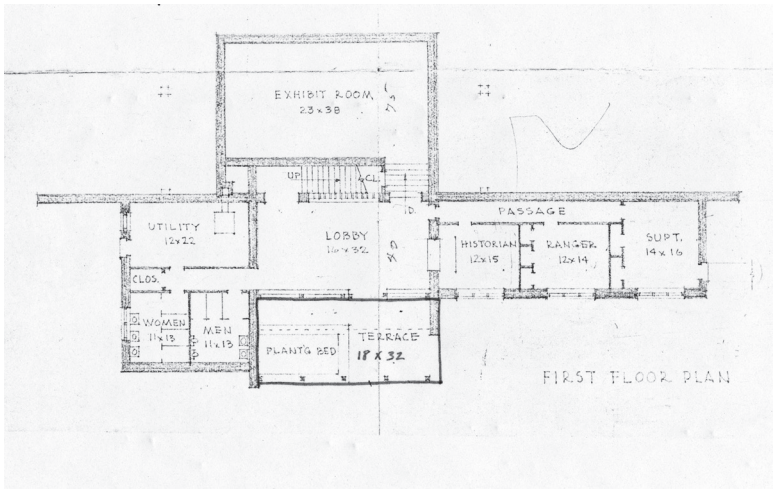


Figure 3-64: NPS sketch of proposed lobby expansion, 1972 (source: Antietam National Battlefield archives, 208).



Figure 3-65: West elevation of Visitor Center prior to lobby extension, February 15, 1973 (source: Antietam National Battlefield archives, ANTI(P)16A61, photographer Jack Rottier).



Figure 3-66: West elevation of Visitor Center prior to lobby extension, February 15, 1973 (source: Antietam National Battlefield archives, ANTI(P)16A62, photographer Jack Rottier).

spring of 1973.[54] This request to essentially double the lobby space came less than ten years after the completion of original construction and spoke to the continually increasing number of visitors to Antietam National Battlefield.[55]

By the following February (1973), an environmental statement filed by the Superintendent noted that enlargement of the lobby was in progress. The project, which took place in the spring of

54 William R. Failor, Superintendent, Antietam-C & O Canal, memorandum to the Director, National Capital Parks, dated November 7, 1972. Copy in Antietam National Battlefield Archives.

55 A number of changes to the number, character, and arrangement of the exhibits were also proposed at this time. See Snell and Brown, *Administrative History*, 390-393 for details.

1973 (figures 3-67 to 3-73) encompassed the enclosure of the existing 16x24 foot flagstone patio at the front door. The side walls were constructed of low rock walls with tinted glass on top, the front wall was the same as the existing outside wall with tinted glass (to reduce the sun's glare) and a roof extension matched the original design and materials of the roof. Since the original exterior wall was load bearing, two structural wood columns were installed in the center of the space to support the structural beam. The sunscreen was removed in this area. No formal plans were prepared or submitted, as the project was done in-house with planning support from the National Capital Parks professional staff. At that time, the building housed staff of both Antietam National Battlefield and C&O Canal, which likely added to the cramped quarters.[56] Photographs from the same time period show other landscaping work taking place, including the infill of a planting bed at the east terrace with flagstone, and bushes being planted in front of the west wall of the administration wing (figures 3-74 to 3-76).



Figure 3-67: Front entry at the beginning of the expansion project, March 1, 1973 (source: Antietam National Battlefield archives, ANTI(P)18B316).

56 William R. Failor, Superintendent, memorandum to Director, National Capital Parks, dated February 26, 1973. Copy held in Antietam National Battlefield Archives. Failor noted there was no environmental impact as the expansion did not extend beyond the existing building construction; NCP concurred with this assessment. C&O Canal staff moved to new headquarters at Ferry Hill Farm in 1976.



Figure 3-68: Front entry showing construction of new knee wall, March 15, 1973 (source: Antietam National Battlefield archives, ANTI(P)18B317).



Figure 3-69: Lobby expansion, framing in progress, March 20, 1973 (source: Antietam National Battlefield archives, ANTI(P)18B326).



Figure 3-70: Lobby expansion enclosure in progress, March, 1973 (source: Antietam National Battlefield archives, ANTI(P)18B328).



Figure 3-71: Lobby expansion enclosure in progress, March 28, 1973 (source: Antietam National Battlefield archives, ANTI(P)18B329).



Figure 3-72: Lobby expansion window frame installation, April 6, 1973 (source: Antietam National Battlefield archives, ANTI(P)18B327).



Figure 3-73: Lobby expansion roof work, undated but circa April 1973 (source: Antietam National Battlefield archives, ANTI(P)18B319).



Figure 3-74: Flagstone infill of a former planting bed at the east terrace, dated March 15, 1973 (source: Antietam National Battlefield archives, ANTI(P)18B325).



Figure 3-75: Installation of shrubs in front of the west wall of the administrative wing, April 1973 (source: Antietam National Battlefield archives, ANTI(P)18B324).



Figure 3-76: Installation of shrubs in front of the west wall of the administrative wing, also showing nearly completed lobby expansion, April 1973 (source: Antietam National Battlefield archives, ANTI(P)18B332).



Figure 3-77: Interior of observation room, looking northeast, 1973. Note audiovisual screen in the corner (source: Antietam National Battlefield archives, ANTI(P)20B02).



Figure 3-78: Interior of observation room, looking north, 1973 (source: Antietam National Battlefield archives, ANTI(P)30B03).

Work in 1973-74 also included the extension of city water to the Visitor Center in September 1973, with the new line installed by the Obbot Excavating Company, replacing the original well. The water main extension was installed by Robert Brinson, contractor.[57] The following year, September 1974, photographs show the replacement of the sunscreen around the observation room (figures 3-79 to 3-80). The posts were yellow pine and the framing redwood. At the same time, insulated glass was installed in the windows and safety glass installed in the doors.[58]

57 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

58 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.



Figure 3-79: Sunscreen replacement, east elevation looking north, September 16, 1974 (source: Antietam National Battlefield archives, ANTI(P)18B318).



Figure 3-80: Sunscreen replacement, south elevation looking north, September 16, 1974 (source: Antietam National Battlefield archives, ANTI(P)18B318).

In 1977-78, further expansion of the Antietam Visitor Center facilities took place, this time at the restrooms. In July 1977, the NPS issued specifications for the proposed work including expansion of the restrooms by approximately 300 square feet and adding covered entry areas of approximately 800 square feet plus landscape work. New asphalt walks were also included in the project (see figures 3-81 to 3-87).[59] The restroom expansion was completed in May 1978, and a new water tank and pump were installed by B. Fink at around the same time.[60] Work during this period also included the painting of all exterior wood by Delauter Construction Company and the installation of concrete walks by Bester-Long.[61]

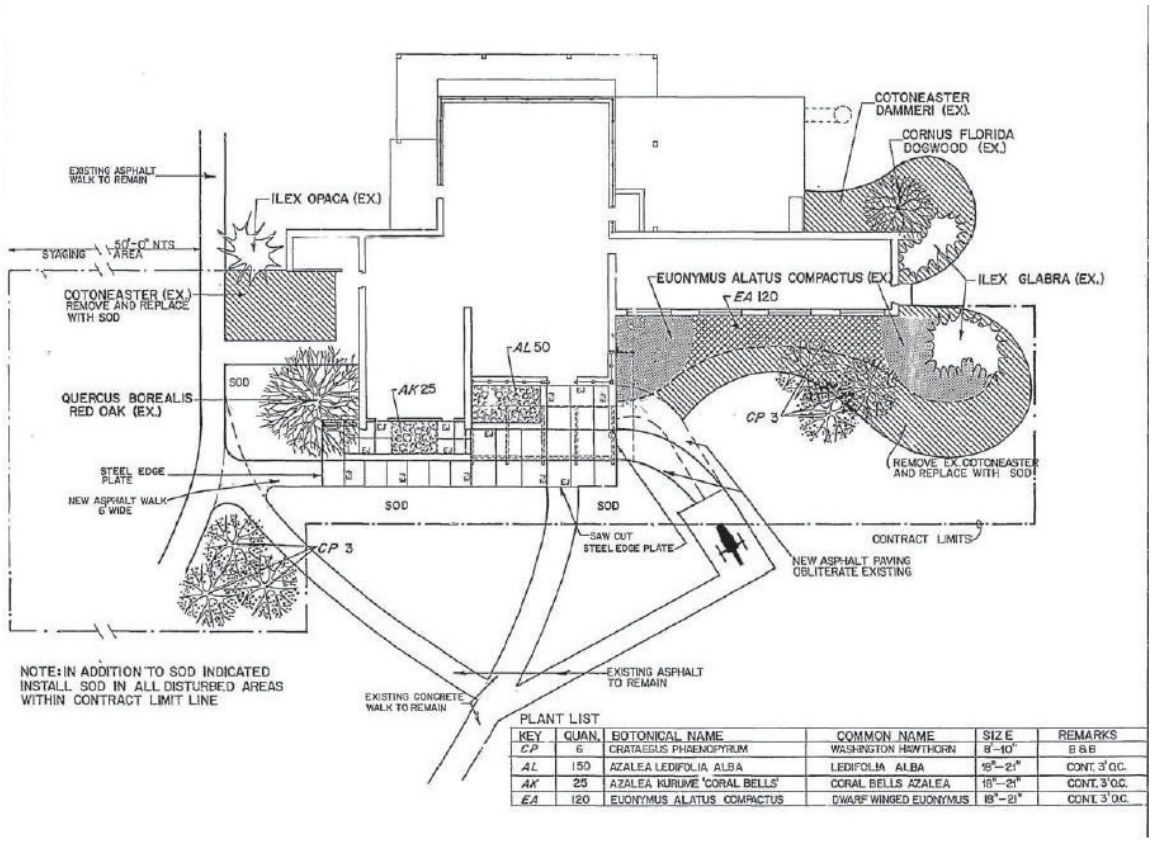


Figure 3-81: Restroom expansion site and landscape plan, 1977 (source: Antietam National Battlefield archives).

59 Denver Service Center," Antietam National Battlefield Site and Cemetery: Expansion of Restroom Facilities, Visitor Center," Project No. 3120-3370, July 26, 1977. Copy held in Antietam National Battlefield Archives.

60 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

61 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

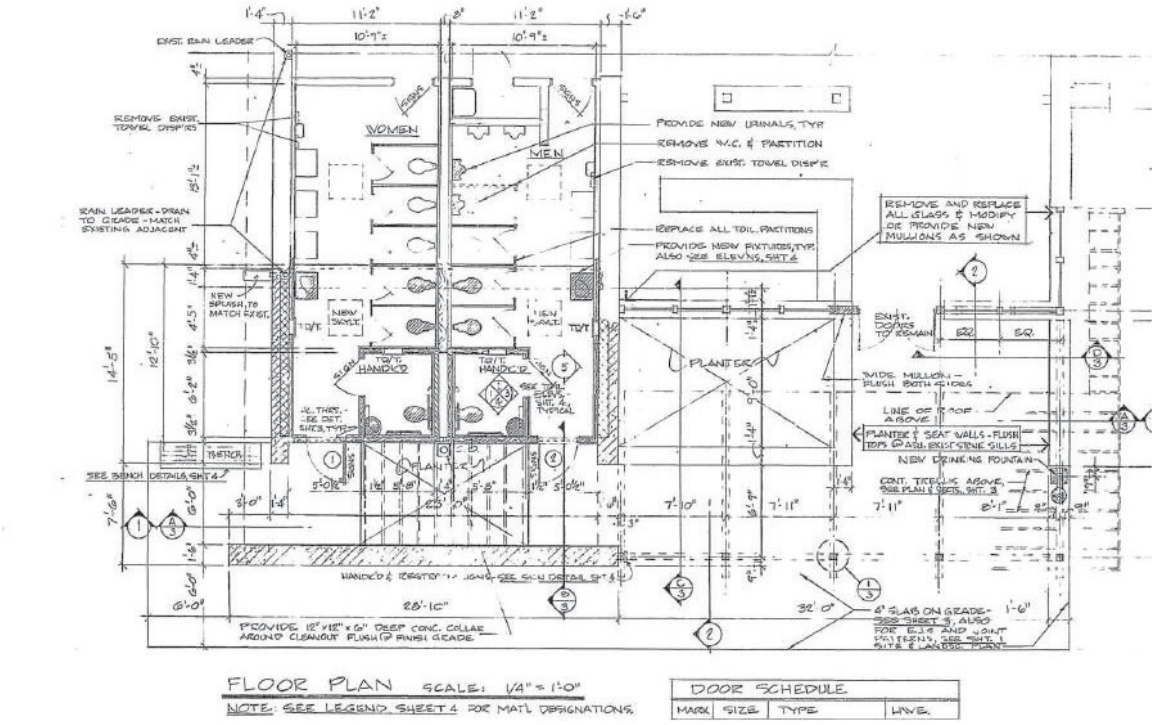


Figure 3-82: Restroom expansion floor plan, detail from construction drawings, 1977 (source: Antietam National Battlefield archives).



Figure 3-83: Restroom expansion in progress; photos are undated but are likely circa 1978 (source: Antietam National Battlefield archives, NP 29-5).



Figure 3-84: Restroom expansion in progress; photos are undated but are likely circa 1978 (source: Antietam National Battlefield archives, NP 29-6).



Figure 3-85: Restroom expansion in progress; photos are undated but are likely circa 1978 (source: Antietam National Battlefield archives, NP 29-11).

Energy conservation was a national concern in the late 1970s and early 1980s, and for several years during this period, the staff at Antietam undertook a number of projects to increase energy efficiency at the Park. At the Visitor Center, projects included installing day/night thermostats, rewiring basement offices and installing baseboard heaters with individual thermostat controls in offices, using water heaters only when needed, installing a woodburning furnace in the visitor center, adding insulation to the attic above the restrooms, replacing



Figure 3-86: Restroom expansion in progress; photos are undated but are likely circa 1978 (source: Antietam National Battlefield archives, NP 29-12).



Figure 3-87: Restroom expansion in progress; photos are undated but are likely circa 1978 (source: Antietam National Battlefield archives, NP 29-13).

the window glass with thermopane glass, and dialing down the thermostats, especially at night.[62]

The strain placed on the Antietam Visitor Center facilities remained a constant theme. The year after the restroom expansion, in 1979, the Denver Service Center produced an assessment of alternatives for accommodating the physically handicapped and moving the Visitor Center's audiovisual program out of the observation room. The report noted that increased visitation has increased the strain on facilities, and

62 Snell and Brown, *Administrative History*, 469-471.



Figure 3-88: South patio stonework repair, August 1979 (source: Antietam National Battlefield archives).

the physically handicapped were required to go outside to travel between the upper level observation room and the lobby, with no access to the museum level. In addition, the audiovisual program (slides accompanied by narration) was located in the observation room, detracting from its value for observation. The preferred solution was relocation of the audiovisual program to a 150 seat auditorium. Five alternatives were evaluated, including one no-action alternative. The remaining four alternatives had a common proposal for solving the accessibility problem, namely removing the central stair and installing a new stair with an elevator to serve all three levels (museum, lobby, observation room). Alternative two included the accessibility modifications but no change to the audiovisual setup (cost: $75,000). Alternative three would have relocated the audiovisual to the existing office and library area on the lower level, originally the fallout shelter with a small addition to the south. This would also require an addition on the west side of the original administrative wing to a line just beyond the expanded wall of the lobby, in a design complementary to the existing structure (cost: $500,000). Alternative four would add an auditorium on the north side of the Visitor Center, widening the existing corridor between the lobby and the new auditorium and reducing the women's restroom by one stall (cost: $200,000). Alternative five was similar to alternative three, but would have a smaller auditorium (no addition on the south side) with a flat rather than sloped floor (cost: $180,000).[63]

63 Denver Service Center, "Assessment of Alternatives: Alterations and Additions to the Visitor Center, Antietam National Battlefield," January 1979, revised April 1979. Copy held in Antietam National Battlefield Archives.

No preferred alternative was identified in the report, and the accessibility modifications were not made (aside from the installation of a small lift between the lobby and museum level) but the NPS eventually chose alternative four, an auditorium on the north side, for its next major project. This prompted some controversy after a Civil War Roundtable newsletter editor in Little Rock, Arkansas, objected to the addition. Park and Regional Office staff consulted with the State Historic Preservation Office, the local Civil War Roundtable, and the Washington County Historical Society, and, with their approval, moved ahead. Design development began in August 1979 under a contract with Bushey Associates of Hagerstown, Maryland ($22,000). Construction began in April 1980 and was completed in August 1980 at a cost of $253,488, which included the chair lift and redesigning the museum space (figures 3-89 to 3-95).[64]

Also in 1980, a new fresh air intake hood was installed.[65]

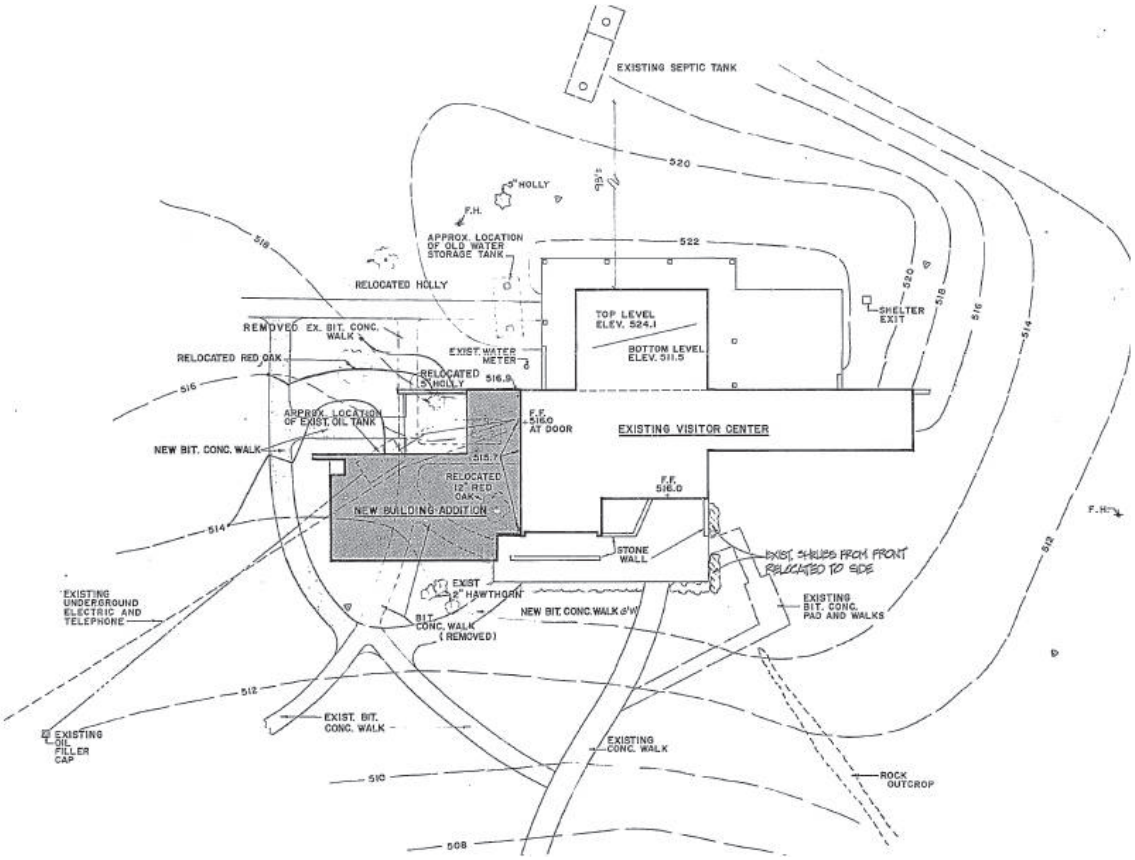


Figure 3-89: Auditorium expansion site and landscape plan, August 1979 (source: Antietam National Battlefield archives).

64 Snell and Brown, *Administrative History*, 487.

65 "Alterations and Additions to the Visitors Center Antietam Battlefield," submitted by the Dexter Company, Baltimore, MD, January 2, 1980; copy at Antietam National Battlefield Archives.

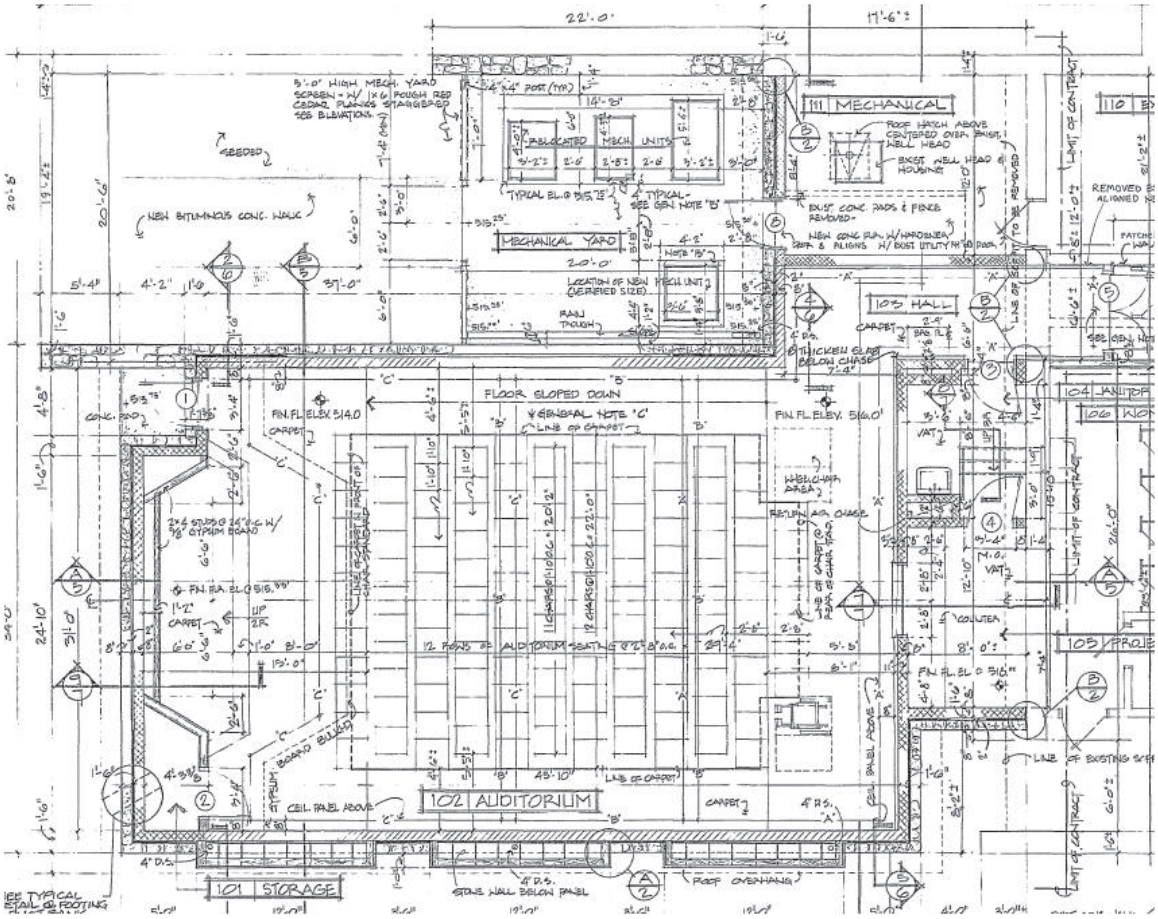


Figure 3-90: Auditorium expansion floor plan, August 1979 (source: Antietam National Battlefield archives).



Figure 3-91: Stone gathered for construction of auditorium addition, April 4, 1980 (source: Antietam National Battlefield archives ANTI(P)18B253).



Figure 3-92: Site of new auditorium addition at beginning of construction, April 4, 1980 (source: Antietam National Battlefield archives ANTI(P)18B254).



Figure 3-93: Auditorium construction in progress, 1980 (source: Antietam National Battlefield archives ANTI(P)18B255).



Figure 3-94: Roof of auditorium addition under construction, 1980 (source: Antietam National Battlefield archives ANTI(P)18B257).



Figure 3-95: West wall of auditorium addition under construction, June 5, 1980 (source: Antietam National Battlefield archives ANTI(P)18B258a).

Work in 1981 included the installation of the Hope painting on the west wall of the observation room. In April 1982, interior designer Richard H. Strand developed an interior décor package for the Visitor Center (figures 3-98 and 3-99). Strand noted that this was not a regularly funded project and the Park intended to implement it over time. He warned that the Park should use the plan to replace existing furnishings and not simply add the new furnishings, or it risked a final appearance that was cluttered with a “jumble” of styles, colors, etc (the current décor represented an accretion of furnishings from the original 1962 furniture to later



Figure 3-96: Installation of the Hope painting on the west wall of the observation room, 1981 (source: Antietam National Battlefield archives ANTI(P)8E04).



Figure 3-97: Scenic photograph of the Visitor Center from the northwest, October 29, 1981, taken by E. Carol Semler (source: Antietam National Battlefield archives ANTI(P)16A69).

additions). Strand lamented that Park staff began painting before he was hired, and had painted woodwork that should have remained stained. He also stressed the importance of removing clutter from the lobby area (particularly the window sills) and leaving empty spaces on the walls to allow the eye to "rest."[66] It is unknown how much of this interior décor package was carried out. A photograph from 1984 does appear to show part of the

66 Richard H. Strand, Interior Décor Package, April 1982 (final). Drawings in Antietam National Battlefield Archives.

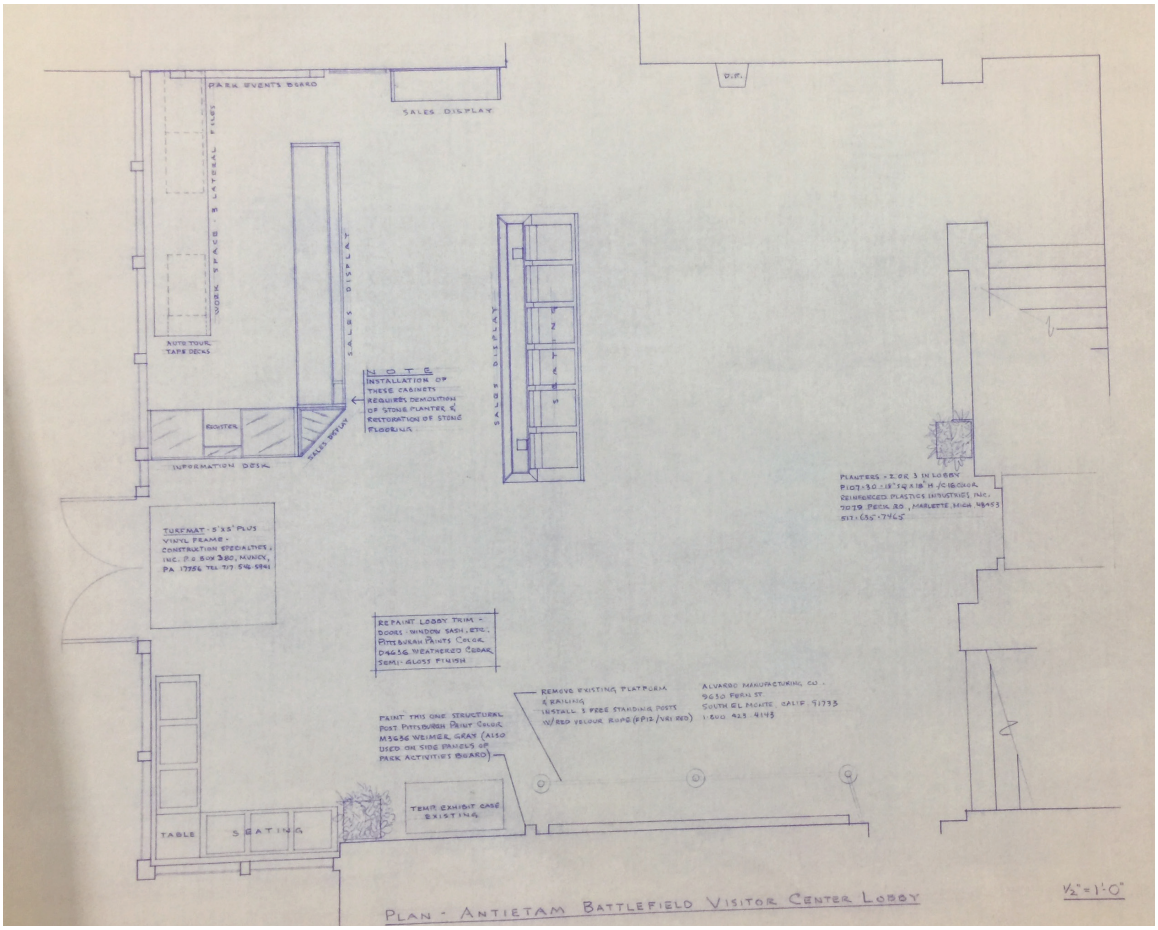


Figure 3-98: Layout for 1982 furnishings plan, lobby (source: Richard H. Strand, Interior Décor Package, April 1982 (final). Drawings in Antietam National Battlefield archives).

information desk in the northwest corner of the lobby, and the bookstore area between the desk and the structural columns in the center of the lobby (figure 3-100). The design does not strictly follow Strand's plan. For example, it does appear that a seating bench was installed around the structural columns, but a book display table was set atop it in the photograph, and the corner of the desk was not angled as shown in Strand's plan.

A new built-up roof was installed in June, 1982, with final inspection confirming it was completed in accordance with the specifications as modified (specifications/details were not found). The work was done by Spencer Roofing, Washington, DC.[67] Also during this year, the exterior was painted by Park staff.[68]

67 Ralph Ross, Contracting Officer, Letter of Acceptance to R. Spencer Roofing, dated July 1, 1982; and Sam Nichols, Chief of Maintenance, Antietam National Battlefield, to the Contracting Officer, National Capital Region, dated July 26, 1982; copies held at Antietam National Battlefield Archives.

68 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

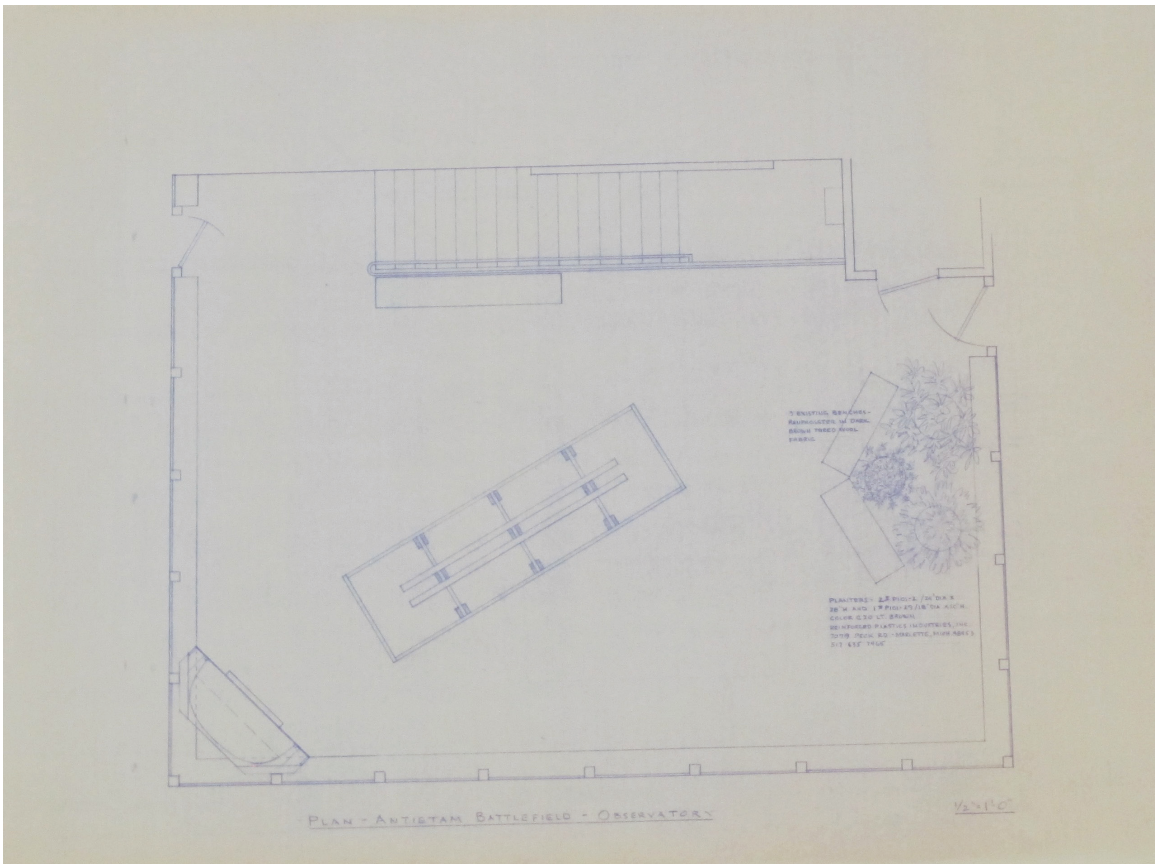


Figure 3-99: Layout for 1982 furnishings plan, observatory level (source: Richard H. Strand, Interior Décor Package, April 1982 (final). Drawings in Antietam National Battlefield archives).



Figure 3-100: Lobby ca 1984, looking north towards what was at the time the bookstore area (source: Antietam National Battlefield archives).

A National Register of Historic Places nomination was prepared for Antietam National Battlefield in 1982. The period of significance was listed as 1800-1899 (nominations at the time identified periods in blocks of 100 years) and had a significant date of September 16-18, 1862 (Battle of Antietam). The nomination listed areas of significance as conservation, military, and politics/government.[69]

In 1984, a redesign of the Visitor Center interior spaces was proposed. The bookstore was to be located in the original administration wing in the historian/interpreter's office, and the enclosed offices at the south end would be used for the bookstore manager and storage. A "Hope Gallery" would be added in the area to the south of the exhibit room with a library, storage, and other offices to be built to the south of the gallery. It does not appear that these changes were carried out at that time (although they were being implemented by 1995, as documented below). A note attached to the proposal recorded that the Hope Gallery was never executed but the Aftermath Gallery was put in that space and finished in 2012.[70] Also during 1984, the water system was renovated by Beaver Mechanical Contractors, Hagerstown.[71]

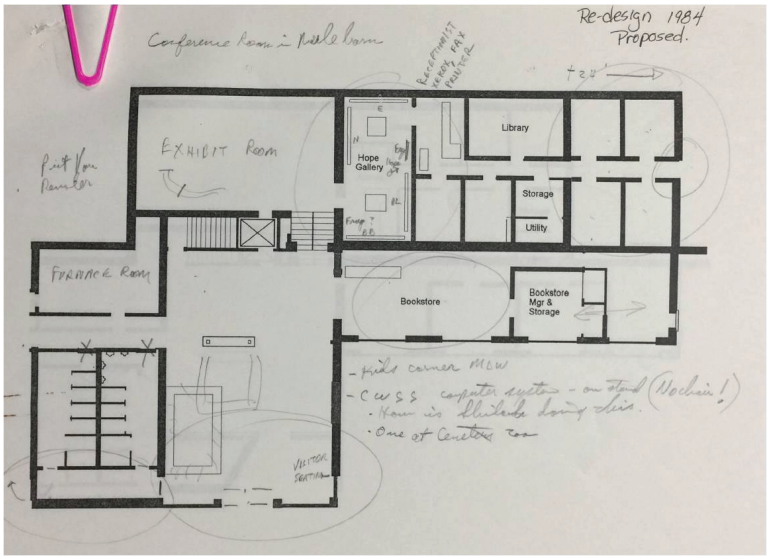


Figure 3-101: 1984 proposed redesign (source: Visitor Center Proposed Re-design. Folder held at Antietam National Battlefield archives).

69 Gary Scott, National Capital Region, "Antietam National Battlefield," (National Register of Historic Places Nomination), prepared August 20, 1981, approved February 10, 1982; copy in Antietam National Battlefield Archives. See also 2009 additional information.

70 Visitor Center Proposed Re-design. Folder held at Antietam National Battlefield Archives.

71 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

Office space continued to be an issue for consideration the following year, 1985, when the Superintendent provided a review of available office space to the Associate Regional Director of the National Capital Region. This noted that the Park had 27 permanent and 1 temporary staff members, with a total of 1,763.4 square feet of office space being used by 18 of the 28 staff and equipment. Additional office space was located in the Lodge building at the National Cemetery.[72] The accompanying sketch plans appeared to show that the alterations recommended in 1984 had not yet been carried out. Park staff remember that the first floor layout was still in place in 1992, with a mailroom/supply area in the first office off the lobby.

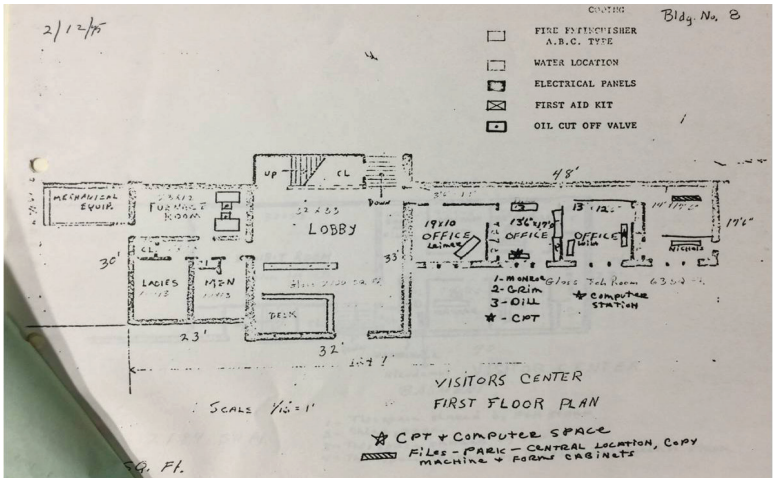


Figure 3-102: First floor sketch plan from office space memo (source: V. G. Leimer, Superintendent, memorandum to Associate Regional Director, National Capital Region, dated August 7, 1985. Copy in Antietam National Battlefield archives).

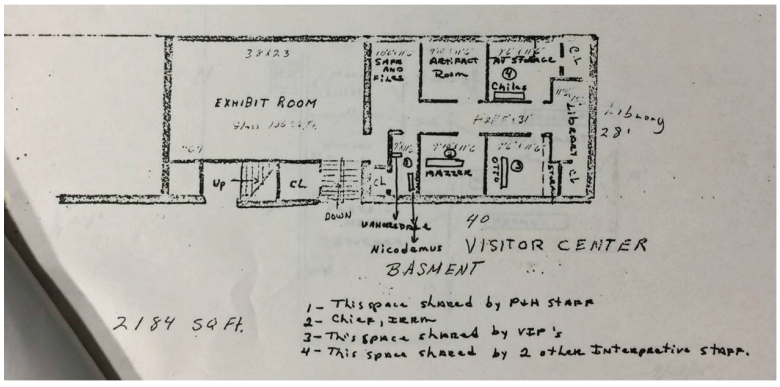


Figure 3-103: Basement sketch plan from office space memo (source: V. G. Leimer, Superintendent, memorandum to Associate Regional Director, National Capital Region, dated August 7, 1985. Copy in Antietam National Battlefield Archives).

72 V. G. Leimer, Superintendent, memorandum to Associate Regional Director, National Capital Region, dated August 7, 1985. Copy in Antietam National Battlefield Archives.

Work at the Visitor Center in the late 1980s through the early 2000s focused mostly on routine maintenance and replacement. The exterior was painted by a contractor in 1986, in 1990 after the replacement of deteriorated lumber, and again in 1998. Park staff also periodically painted the interior, including the lobby, bookstore, and restroom corridor in 1996, the observation room in 1998, and the lower museum area, hallway landing, hallway and stair to the observation room, and chief of interpretation's office in 1999. Also in 1999, the Dorsey Brothers installed carpet in the basement museum area and the old underground fuel tank was removed and replaced by a contractor.[73] That same December, a tentative schedule for elevator (lift) work described removal of the old elevator (lift), handicap ramp, and side guards, removal and replacement of the concrete floor pad, and installation of a new lift. The work was carried out by Gary Reid of Reid Elevator in late 1999-early 2000.[74] Later in 2000, the lower museum was renovated and the walls painted, while a new float valve is installed on the water tank by Beaver Mechanical of Hagerstown.[75]

The furnace was replaced in 1988 under a contract with M. S. Johnston Co., Inc, Hagerstown.[76] It was replaced again in November 2002. The invoice listed this as a Williamson CLB-210-BD-R-X-W Centennial Furnace with a WL4305 Beckett Burner, to be connected to the existing smoke pipe, oil line, and duct work.[77]

In 1990, ten years after it was constructed, the auditorium was dedicated to the memory of James Vernon Murfin. Murfin worked for the NPS for 18 years and was a scholar and promoter of the significance of Antietam. He passed away in 1987.[78]

The National Park Service prepared a General Management Plan and Final Environmental Impact Statement for Antietam National Battlefield in 1992. This document noted that there were a number of problems with the space allocations and functions of the Visitor Center, including the dominance of the cooperating association sales area (bookstore) in the lobby, multiple visitor

73 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

74 Chief of Maintenance Operation, memorandum to Superintendent, Assistant Superintendent, and Division Chief, dated December 5, 1999. Copy at Antietam National Battlefield Archives; "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

75 "Maintenance History of Visitor Center," manuscript supplied by Antietam National Battlefield.

76 Thomas M. McConnell, Contracting Officer, Letter of Acceptance to Don Newbraugh, M. S. Johnston Co., Inc., May 3, 1988. Copy at Antietam National Battlefield Archives.

77 Harrell's Pump Service, Invoice dated November 26, 2002. Copy at Antietam National Battlefield Archives.

78 James V. Murfin Memorial Auditorium Dedication Program, March 4, 1990. Copy at Antietam National Battlefield Archives.

use/interpretation levels, and lack of disabled access. To address these issues in the short term, the General Management Plan recommended moving the bookstore to the south wing, converting the entire basement (including exhibit room) into offices, moving exhibits to the lobby, moving the staircase to the observation room to the location of the stairs down to the exhibit space, and installing an elevator that would reach the observation level. In the long term, the GMP/EIS envisioned that the Visitor Center would be removed when it "reached the end of its useful life" because it represented an intrusion in an otherwise historic area.[79]

The lobby area was redesigned in 1995-96. In May 1995, the bookstore moved into the north portion of the former office wing (figure 3-104). A newspaper article announcing the move noted that the bookstore and the information counter "basically switched positions," suggesting that the information counter had formerly been located in the office wing. It is unclear what this reference means, as the information desk had moved into the lobby area in the early 1970s, and no information was found to suggest that it had been moved back into the office wing area after that (and the 1984 plan shows the information desk in the

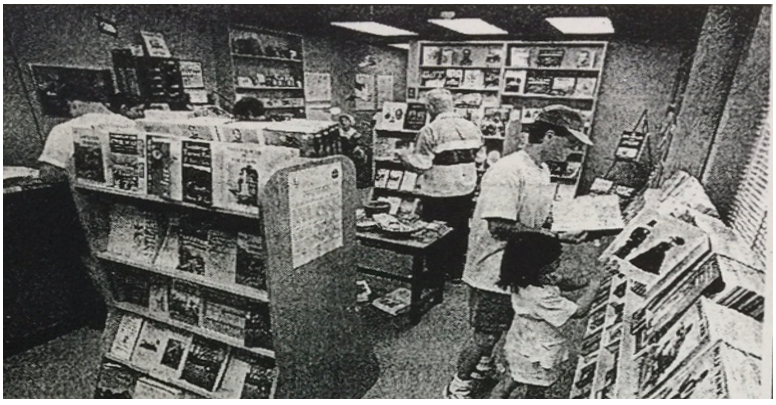


Figure 3-104: New bookstore space in office wing, 1995 (source: Clyde Ford, "Antietam Gets a New Bookstore," [publication not identified], dated July 9, 1995, supplied by Antietam National Battlefield staff).

northwest corner).[80] The rest of the wing remained offices. Along with the bookstore move, the door between the lobby and the new bookstore was moved to its present location, the information desk was moved to its present position, one of the support posts in the lobby was removed and the remaining post replaced with a steel post, and new ceiling lighting was installed. The exhibit

79 "Environmental Impact Statement and General Management Plan: Antietam National Battlefield," National Park Service, June 1992.

80 Clyde Ford, "Antietam Gets a New Bookstore," [publication not identified], dated July 9, 1995, supplied by Antietam National Battlefield staff.

wall in front of the stairs to the observation room was installed at this time. Other work around this time, according to park staff, included moving the Hope paintings from the observation room to the museum, building an exhibit wall and adding an exhibit case, among others.

The bookstore was expanded to its present space in 2002, after the Western Maryland Interpretive Association took over management of the bookshop in April 2000 (it had previously been operated by Parks & History, a nonprofit corporation that operated bookstores in the Washington area). In addition to funding the bookstore expansion, proceeds from bookstore sales also funded a new public address system and enabled the NPS to move Antietam's research library from the Visitor Center basement to a small house on the edge of the park.[81]

In 2002, the ca. 1982 roof was reaching the end of its functional life, and replacement drawings were produced, with the work taking place in 2003-2004.[82] Also in 2002, NPS staff installed an airlock-type entrance to the Visitor Center to improve accessibility for visitors and staff. Prior to this, staff had utilized a portable vestibule that had to be brought in and out twice a year. The new vestibule consisted of pouring a concrete pad for access and minor masonry work on the adjoining wing wall, construction of the walls and roof of the airlock, installation of two sets (interior and exterior) of automatic doors and five energy-efficient windows, and three sets of exterior lights to improve visibility (only one automated door was installed, on the south leaf of the exterior set).[83] Other work in 2002 included the installation of six exterior solar light fixtures (20' aluminum poles with solar panels), and Park staff were discussing the need for new intrusion, fire detection and suppression systems in the building. The installation of a mist system for fire suppression was discussed again the following year, but tabled due to lack of funds.[84]

A small alteration in 2003 was the removal of the wall of one office in the basement (figure 3-105). This sketch also shows that the former artifact room and file area had been combined into the library space, probably sometime prior to 1999 based on staff recollections. Also that year, Harrell's Pump Service removed

81 "Expanded Bookstore New Draw at Antietam Center," *Herald-Mail*, May 5, 2002, supplied by Antietam National Battlefield staff.

82 Roof Replacement package drawings, dated November 2001, held at Antietam National Battlefield Archives; "Replace Visitor Center Roof," PMIS 76231 supplied by Antietam National Battlefield staff.

83 "Rehab Entrance to Visitor Center for Accessibility," PMIS 64258, supplied by Antietam National Battlefield staff.

84 Order for Supplies or Services, dated June 6, 2002; Mohd Saraira, Project Supervisor, letter to Steven Mayer, Nieto Engineering, Jessup, MD, dated September 6, 2002; John Howard, email to Stephanie Gray, dated February 5, 2003. Copies at Antietam National Battlefield Archives.

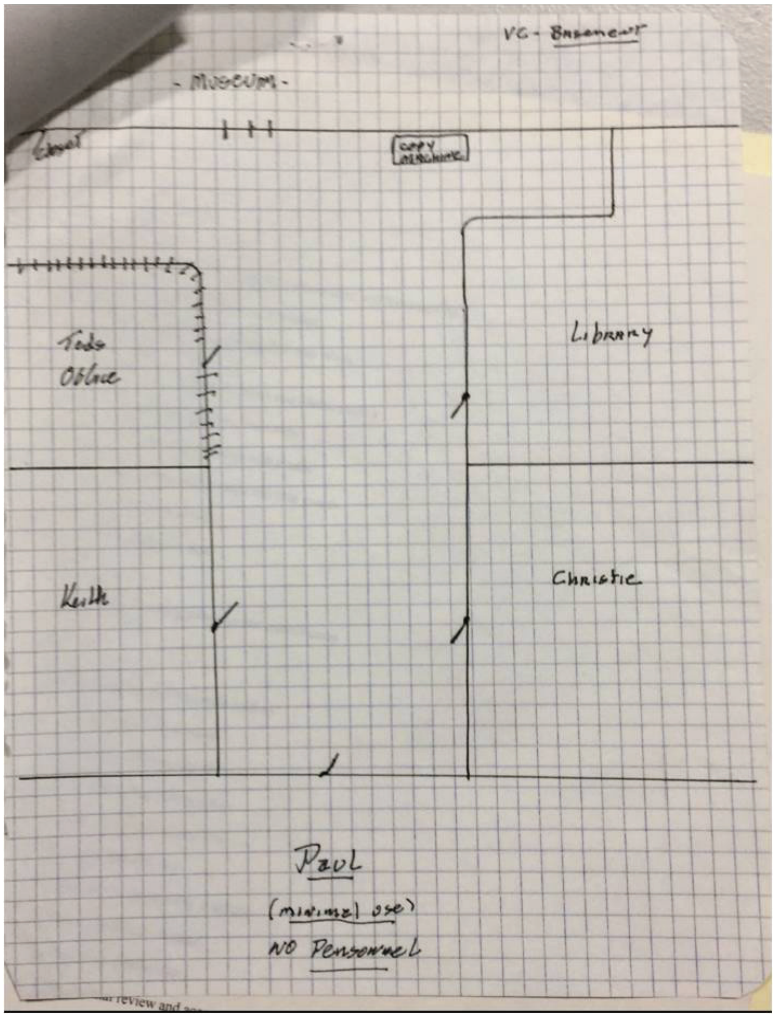


Figure 3-105: Sketch from wall removal memo (source: John Howard, memorandum to Stephanie Gray, dated February 26, 2003, copy at Antietam National Battlefield archives).

the existing Goulds well pump in the wet well adjacent to the domestic water tank and installed two new Goulds 3BFIC1C0 well pumps.[85]

Air conditioning was a theme in 2004, when staff noted fluctuations in temperature and humidity in the building. Only specific staff members were authorized to make adjustments to the thermostats and dehumidifiers, and staff were requested to keep doors to the exterior, theater, and basement closed.[86] In

85 John Howard, memorandum to Stephanie Gray, dated February 26, 2003; Harrell's Pump Service, Invoice dated March 21, 2003. Copies at Antietam National Battlefield Archives.

86 Stephanie Gray, memorandum to Visitor Center staff, dated May 19, 2004. Copy at Antietam National Battlefield Archives.

August of that year, Harrell's Pump Service installed a new air condensing unit for the auditorium.[87]

Work in the mid to late 2000s included tinting the glass of the observation room, front doors (replacement) and gift shop/gift shop office (replacement), the installation of a rolling aluminum security gate in the lobby, and the replacement of the dimmer panel in the auditorium. [88]

An amendment to the 1982 National Register nomination was approved by the Keeper of the National Register on February 27, 2009. The nomination provided additional documentation. The boundary remained the same, but the amended nomination provided additional contexts including pre-battle history and agricultural development of the community; battle-related history including the effect of the battle on the outcome of the Civil War, its impact on the local population, and its connection to the Emancipation Proclamation; and post-battle memorialization, monumentation, and efforts at battlefield preservation. It also addressed the cultural landscape of the battlefield and surrounding areas and additional documentation on properties acquired since 1981.[89]

In 2012, the "Aftermath Gallery" (Exhibit Room 2) was created from the north half of the former office space in the original fallout shelter. Work was carried out by park staff while contractors installed the exhibits.

In the summer of 2015, the roof over the basement museum/office wing was replaced. The work included removal of the flagtsones, mortar bed, and concrete slab down to the structure, installation of a new hot fluid applied rubberized asphalt waterproofing, lightweight concrete topping, and new Pennsylvania Cleft flagstone.[90]

87 RW Harrell's Pump Service, proposal dated August 10, 2004. Copy at Antietam National Battlefield Archives.

88 Doctor Tint, Hagerstown, Estimate for Window Tinting, dated January 1, 2005; Overhead Door Company of Hagerstown, Estimate, dated February 28, 2005; Neeko Construction, Inc., "Dimmer Panel Equipment," dated February 6, 2006. All copies at Antietam National Battlefield Archives.

89 Paula Reed, Architectural Historian, "Antietam National Battlefield – Additional Documentation," (National Register of Historic Places Nomination Form), prepared November 1999, approved February 27, 2009; copy held at Antietam National Battlefield Archives.

90 Peck Peck & Associates, "Repair Leaking Roof for the Visitor Center Antietam Specifications," 100% Construction Documents dated April 2015. Copy at Antietam National Battlefield Archives.

Summary Chronology

1862 September 17: The Battle of Antietam (Sharpsburg) takes place near Sharpsburg, Maryland.

1865 Antietam National Cemetery is established by the Maryland State Legislature and dedicated on September 17, 1867, the fifth anniversary of the battle.

1867 A two-story stone building is constructed within the walls of the National Cemetery at Antietam as a custodian's office (now known as the National Cemetary Lodge). It would later be used as the museum and office building for Antietam National Battlefield until the construction of the Visitor Center.

1890 August 30: An Act of Congress establishes the Antietam National Battlefield Site. It is initially under the jurisdiction of the War Department.

1933 The War Department transfers jurisdiction over Antietam National Battlefield to the Department of the Interior, to be administered by the National Park Service.

1941-42 The Park requests construction of a museum to be located between the cemetery office and residence. The request is not carried out. Instead, the existing building is reconfigured to provide more space for the museum collection. The area around the New York Monument Plot is identified as the ideal site for a new administration/museum building in the future due to its strategic views of the battlefield.

1956 Beginning of the Mission 66 era at the National Park Service. Work planned for Antietam National Battlefield includes land acquisition, infrastructure improvements, and the construction of a Visitor Center.

1957 Antietam National Battlefield Superintendent Harry Doust prepares a project construction program proposal form (PCP) for the construction of a Visitor Center to house administration, museum, and exhibits. Doust approves the PCP on October 2, 1958.

Historian Frederick Tilberg prepares a museum prospectus for Antietam National Battlefield outlining space needs and a sketch layout.

1958 Design development of the new Visitor Center is underway. The Park requests inclusion of the construction cost in the 1959 budget, but the land for the project has not been acquired.

1960 The federal government approves the acquisition of additional land for Antietam National Battlefield.

1961 July: Money for the Visitor Center construction is appropriated.

October: Superintendent Benjamin H. Davis announces a request for bids on construction of the new Visitor Center, to be completed by August 1962 in time for the battle centennial.

December: The first tract purchased under the Mission 66 land acquisition program is 148.5 acres of the Spielman farm (historic Mumma farm), the land designated for a Visitor Center.

1962 January 16: Work starts on the visitor center by W. Harley Miller, Inc. of Martinsburg, West Virginia, the low bidder.

March: After concrete footings for the building are poured, cold weather delays progress on the structure.

April: The NPS awards a contract of $50,000 for the construction of entrance roads and parking areas at the Visitor Center and Burnside Bridge to Bester-Long, Inc. of Hagerstown, the lowest of eight bids. In the same month, the Department of Defense contributed $39,500 for the addition of a fallout shelter to the building. This space would double as an auditorium.

May: After work resumes from the weather delays of early spring, the walls begin to rise at the new building. Construction is still scheduled for completion by the Antietam centennial in September.

August: Although construction is still ongoing, the site adjacent to the Visitor Center is scheduled for a re-enactment of the Battle of Antietam in September 1962. Because the existing grass has been extensively disturbed and would likely turn to mud in the event of rain, NPS approves a work order to remove an old concrete post and pipe fence and to seed approximately three acres around the building with common rye grass. The work is accomplished by local contractors at a total cost (materials and labor) of $275.

August 30: Construction continues to progress, with the observation room roughed in by this time. Expected completion is now after October 1st.

October 10: National Park Service architects Donald Nutt and Frank Petrillo inspect and accept the completed visitor center building.

November: Donald Nutt of the EODC sends the furnishings plan for the new visitor center to the Regional Director of the Northeast Region. The estimated cost is $3,609.04, with an allowance of $250 for shipping.

1963 Costs for grounds development around the Visitor Center are listed at a total of $15,897.03. Bids are advertised in January/February and Treeland Nurseries of Frederick, MD is the low bidder, with the contract awarded in late February. Work begins on April 15, 1963. The work includes not only planting and seeding around the Visitor Center, but also at the Burnside Bridge area. The project includes the purchase of fiberglass planters fabricated by Architectural Pottery. The planting plans and specifications are prepared by the Eastern Office, Design and Construction and are approved in January 1963. Work is temporarily suspended from May 28 to October 17 due to another contract being in progress. All work is completed on October 21, 1963, and the work accepted on October 24th.

February: New museum exhibits are installed in the Visitor Center, comprising 32 wall panels and display cases.

November/December: NPS staff and architects discuss deficiencies with the contractor, including the failure of the water tank and leaking of the roof. The issues are resolved in early 1964, with NPS taking responsibility for the water tank and the contractor addressing the roof issues.

1964 October: The fallout shelter at the Antietam Visitor Center has been stocked with provisions by the Civil Defense authorities; it is designed to protect 50 people.

1965 The observation room is noted as “cluttered” and the Superintendent expresses a hope for something “new, daring, and spectacular” for the interpretive treatment of the room.

1966 April: Revisions are made to the air conditioning system in the auditorium/fallout shelter.

September: The audiovisual slide program is installed in the observation room.

1967 Water is observed to be infiltrating along the wall dividing the assembly room (fallout shelter) from the exhibit room. As the wall is directly beneath the exterior wall at the south side of the observation room, adjacent to the terrace, it is suspected that the terrace is leaking. As an interim treatment, a clear waterproofing agent is applied to the terrace and appears to be successful after a heavy rain.

The administrative staffs of Antietam and the Chesapeake and Ohio Canal merge, and the auditorium/fallout shelter is converted to offices.

1972 Alterations are made to lobby, including infilling former information window and moving desk to east wall. The stair side of the east open divider wall is covered.

September: A series of photographs marked “painted” on the back suggest that the exterior wood was painted at this time.

October: Photographs show work in progress on the terrace west of the observation room, possibly the recommended reconstruction of the terrace to address leaking.

November: The Superintendent submits a request to expand the lobby. The lobby is “crowded beyond belief” all during the summer and on spring and fall weekends. and expansion would provide for an enlarged sales desk and more interpretive display space. The expected cost is $11,000 with the work to be done by in-house staff in the spring of 1973.

1973 February: Enlargement of the lobby is in progress. The project encompasses the enclosure of the existing 16x24 foot flagstone patio at the front door. The side walls are low rock walls with tinted glass on top, the front wall is the same as the existing outside wall with tinted glass (to reduce the sun’s glare) and a roof extension to match the present design and materials of the roof. The sunscreen is removed.

At the same time, additional site work is taking place, including the flagstone infill of a former planting bed at the east terrace, and the installation of shrubs in front of the west wall of the admin wing.

September: A city water line is run to the Visitor Center by Obbot Excavating Company, replacing the original well. A water main extension is installed by Robert Brinson, contractor.

1974 September: Photographs show the replacement of the sunscreen around the observation room. The posts were yellow pine and the framing redwood. At the same time, insulated glass is installed in the windows and safety glass installed in the doors.

1976 C&O Canal staff move from Antietam to new quarters at Ferry Hill Farm.

1977 July: The NPS issues specifications for the expansion of the restroom facilities at the Visitor Center. The proposed work includes expansion of the restrooms by approximately 300 square feet and adding covered entry areas of approximately 800 square feet plus landscape work. New asphalt walks are included in the project.

According to an NPS Maintenance History, work during this year also includes the painting of all exterior wood by Delauter Construction Company and the installation of concrete walks by Bester-Long.

1978 May: The expansion of the restrooms is completed by R. Delauter and Son, Thurmont, MD. At the same time, a new water tank and pump are installed by B. Fink.

1979 January/April: The Denver Service Center produces an assessment of alternatives for accommodating the physically handicapped and moving the Visitor Center's audiovisual program out of the observation room. The report notes that increased visitation has increased the strain on facilities, and the physically handicapped are required to go outside to travel between the upper level observation room and the lobby, and have no access to the museum level. In addition, the audiovisual program (slides accompanied by narration) is located in the observation room, detracting from its value for observation. The preferred solution is relocation to a 150 seat auditorium. Five alternatives are evaluated, including one no-action alternative. No preferred alternative is identified. The accessibility modifications were not made (aside from the installation of a small lift between the lobby and museum level) but the auditorium on the north side (alternative four) is the eventual choice.

August: The south patio stonework is repaired.

1980 January: A new fresh air intake hood is installed.

April: Construction begins on auditorium addition.

A photograph of an artillery exhibit in the lobby from this year shows a portion of the divider between the lobby and stair, showing that the back (stair) side of the divider had been covered with drywall.

1981 Installation of the Hope painting on the west wall of the observation room.

1982 April: Interior designer Richard H. Strand develops an interior décor package, to be implemented in phases. It is unclear how much of this work is carried out.

June: The installation of a new built-up roof is completed and the final inspection confirms it is completed in accordance with the specifications, as modified. The work is done by Spencer Roofing, Washington, DC.

A National Register of Historic Places nomination is prepared for Antietam National Battlefield.

Also during this year, the exterior is painted by Park staff.

1984 A redesign of the Visitor Center interior spaces is proposed. The bookstore is to be located in the original administration wing in the historian/interpreter's office; the enclosed offices at the south end would be used for the bookstore manager and storage. A "Hope Gallery" would be added in the area to the south of the exhibit room with a library, storage, and other offices to be built to the south of the gallery. A note attached to the proposal records that the Hope Gallery was never executed but the Aftermath Gallery was put in that space and finished in 2012.

Also during this year, the water system is renovated by Beaver Mechanical Contractors, Hagerstown.

1985 August: The Superintendent provides a review of available office space to the Associate Regional Director of the National Capital Region. This notes that the Park has 27 permanent and 1 temporary staff members, with a total of 1,763.4 square feet of office space being used by 18 of the 28 staff and equipment. Additional office space was located in the Lodge building at the National Cemetery. The accompanying sketch plans appear to show that the alterations recommended in 1984 have not yet been carried out.

1986 The exterior is painted by a contractor.

1988 April-May: The furnace is replaced under a contract with M. S. Johnston Co., Inc, Hagerstown.

1990 March 4: Ten years after it was constructed, the auditorium is dedicated to the memory of James Vernon Murfin. Murfin worked for the NPS for 18 years and was a scholar and promoter of the significance of Antietam. He passed away in 1987.

Deteriorated lumber on the exterior is replaced and the exterior painted.

1992 The National Park Service prepares a General Management Plan/Environmental Impact Statement. Short term recommendations for the Visitor Center include relocating the bookstore to the south wing, moving exhibits to the lobby and remodeling the basement as offices, and installing an elevator. In the long term, the document envisioned removal of the building when it reached the end of its “useful life” as it constituted an intrusion in an otherwise historic area.

1996 The lobby area is redesigned. The bookstore moves to the north portion of the south wing, with a new, wider door into the space, the information desk moves to its present position, and one of the support posts is removed and the remaining post replaced with a steel post. New lighting is also installed, an exhibit wall built at the east wall of the lobby, and park staff paint the lobby, bookstore, and restroom corridor.

1998 The observation room and exterior are painted by Park staff and a seasonal painting crew.

1999 Park staff paint the lower museum area and hallway landing, hallway and stair to the observation room, and chief of interpretation’s office. New carpet is installed by Dorsey Brothers in the basement museum area, and the old underground fuel tank is removed and replaced by a contractor.

December: A tentative schedule for elevator (lift) work describes removal of the old elevator (lift), handicap ramp, and side guards, removal and replacement of the concrete floor pad, and installation of a new lift. The work is carried out by Gary Reid of Reid Elevator in late 1999-early 2000.

2000 In the early winter, the lower museum is being renovated and the walls painted. A new float valve is installed on the water tank by Beaver Mechanical of Hagerstown.

2002 The present airlock-type entry vestibule is added.

May: The bookstore is expanded to its present size and the parks' research library is moved from the basement to another building within the park.

June: Six exterior solar light fixtures (20' aluminum poles with solar panels) are installed.

September: New intrusion, fire detection, and fire suppression systems are being discussed.

November: A new furnace is installed. The invoice listed this as a Williamson CLB-210-BD-R-X-W Centennial Furnace with a WL4305 Beckett Burner, to be connected to the existing smoke pipe, oil line, and duct work.

2003 January/February: The installation of a mist system for fire suppression is discussed, but tabled due to lack of funds.

February: The walls of one office in the basement are removed.

March: Harrell's Pump Service removes the existing Goulds well pump in the wet well adjacent to the domestic water tank and installs two new Goulds 3BFIC1C0 well pumps.

The building roof is replaced over the fall/winter of 2003-2004.

2004 May: Staff note fluctuations in temperature and humidity in the building; only specific staff members are authorized to make adjustments to the thermostats and dehumidifiers, and staff are requested to keep doors to the exterior, theater, and basement closed.

August: Harrell's Pump Service installs a new air condensing unit for the auditorium.

2005 January: Doctor Tint of Hagerstown submits a proposal for tinting the glass of the observation room, front doors (replacement), and gift shop/gift shop office (replacement).

2005 February: NPS solicits a proposal for installation of a rolling aluminum security gate in the lobby, which is installed.

2006 February: The dimmer panel in the auditorium is replaced.

2009 An amendment to the 1982 National Register nomination is approved on February 27. The nomination provided additional documentation. The boundary remains the same, but the amended nomination provides additional contexts including pre-battle history and agricultural development of the community; battle-related history including the effect of the battle on the outcome of the Civil War, its impact on the local population, and its connection to the Emancipation Proclamation; and post-battle memorialization, monumentation, and efforts at battlefield preservation. It also addresses the cultural landscape of the battlefield and surrounding areas and additional documentation on properties acquired since 1981.

2012 The “Aftermath Gallery” is created from the north half of the former office space in the original fallout shelter.

2015 Summer: The roof over the basement museum/office wing is replaced. The work includes removal of the flagstone, mortar bed, and concrete slab down to the structure, installation of a new hot fluid applied rubberized asphalt waterproofing, lightweight concrete topping, and new Pennsylvania Cleft flagstone.

Significance of the Antietam National Battlefield Visitor Center

The Visitor Center at Antietam National Battlefield has not been formally evaluated for listing in the National Register of Historic Places, although a nomination covering Mission 66-era resources at Antietam is being prepared by National Capital Region staff. The Antietam Visitor Center is discussed in the 2012 draft Multiple Property Documentation Form for Mission 66-era resources in the National Capital Region. However, no formal evaluation took place as part of that document, beyond a mention of the building as "comparing favorably" with other Park Service Modern buildings. Mission 66 visitor centers are also documented in the 2015 final Multiple Property Listing for Mission 66 Era Resources (nationwide), but there is no mention of the Antietam Visitor Center in that document.

The MPDF does, however, establish registration requirements (criteria for evaluation) for properties to be nominated under the MPDF.[91] Visitor centers should be considered under Criterion A "as potentially significant examples of changing visions for national park planning and development during the period of significance" and Criterion C "as potentially significant for their association with modernist design precepts and construction techniques." The MPDF establishes characteristics that a property should possess; these are listed below with assessment related to Antietam following.

1. The visitor center should be one of the important precedents of the Mission 66 program (1945-1956), be one of the visitor centers originally planned and built as part of the Mission 66 program (1956-1966), or as part of the Parkscape program (1966-1972). The property's period of significance should fall within the years 1945-1972.

Antietam National Battlefield Visitor Center was one of the visitor centers "originally planned and built as part of the Mission 66 program (1956-1966)."

2. The visitor center should retain most or all of the physical characteristics described in the description of the property type. The visitor center should be a centralized facility that includes multiple visitor and administrative functions within a single architectural floor plan or compound. Programming elements should include interpretive displays, space for slide shows and films, visitor contact, restrooms, and other services. The visitor center should be intended to serve the public by interpreting scenery, natural resources, and

91 These requirements are duplicated in the 2015 Multiple Property Listing for National Park Service Mission 66-Era Resources (nationwide), signed by the Keeper of the National Register on September 30, 2015. Both are drawn from Sarah Allaback's *Mission 66 Visitor Centers: The History of a Building Type* (Washington, DC: Government Printing Office, 2000).

cultural sites, and should be a major point of visitor arrival, orientation, and service.

Antietam National Battlefield Visitor Center retains these physical characteristics. Although alterations have been made, it remains a centralized facility with multiple functions in one floor plan and includes all the programming elements and functions listed.

3. The visitor center should possess physical integrity to the period of significance. The National Register requires that the integrity of a property be evident through historic qualities including location, design, setting, materials, workmanship, feeling, and association. Examples of alterations or remodeling that may impair the historical integrity of a visitor center include (but are not limited to):

    - The addition of a new façade, new entrance wing, or other major exterior alteration that transforms the outward appearance of the building.
    - Complete alteration of entrance and sequence through building, due to the addition of new building wings, entrances, or other major alterations.
    - New roof structure that completely alters exterior appearance of building (such as pitched, raised-seam metal roof replacing original flat roof).
    - Extensive interior remodeling that alters definition of interior spaces, function of spaces, and sequence through spaces.

Antietam National Battlefield Visitor Center generally retains physical integrity to the period of significance. While alterations have been carried out, including several additions, they have generally been complementary to the original massing, materials, and appearance of the original building. The entrance and sequence through the building have also been generally retained, with the exception of the relocation of the auditorium and the opening of the bookstore. However, these do retain the general characteristics of the original design flow (opening off the lobby).

4. The visitor center should embody distinctive characteristics of a type, period, or method of construction that represent high artistic values. Specifically, the visitor center should be a successful reflection of the principles of “Park Service Modern” style. These include:

    - The building is sited in relation to an overall plan of “visitor flow” in the park, either near the park entrance, en route to a major park destination, or at a park destination.
    - The building design emphasizes plan organization (the design of the floor plans). The floor plan organization

allows segregation of public areas from administrative areas, and also emphasizes efficient “visitor flow” through the building itself. A central lobby space is often the arrival point, with trails or other park destinations often accessed as the visitor moves through the building.

- The building’s program centralizes numerous park services, including information, interpretation, rest rooms, and administrative offices.
- The building makes use of the formal vocabulary and materials of contemporary (1945-1972) modern architecture, including flat roofs (as well as other types of roofs), window walls (and other unorthodox fenestration), exposed steel supports, concrete and concrete block construction.
- Overlapping functional spaces (free plans) are sometimes evident in floor plan. Public areas are usually on one level, or on split levels, segregated from administrative areas.
- Interior and exterior public spaces are integrated, often separated by windows, window walls, glass doors, or wooden doors with windows.
- Entrances, exits, and other doorways often are wide, providing easy movement for crowds. Entrances are often sheltered by porches, ramadas, arcades, etc. Rest rooms often nearby, with separate outdoor entrance.
- The building emphasizes the visitor’s experience of spatial procession. This sequence of spaces often features ramps, as well as significant views of park landscapes either from terraces or through large windows.
- Siting of the visitor center near a landscape or an attraction to be interpreted sometimes allows interpretive programs to be extended into the visitor center itself.
- The building’s elevations create a mostly low-profile, horizontal effect.
- The building “harmonizes” with its setting through horizontality of massing, color and texture of materials. Use of textured concrete, concrete block, and stone veneers in facades often give the building a generally rough exterior texture, often featuring earth toned colors.
- The building footprint is often ell-shaped, rectangular around a central courtyard, or a variation on these themes.
- Use of naturalistic planting partially screens building, utility areas, and parking, and repairs areas disturbed in construction. Planter boxes often define entrances.
- Outdoor spaces and site work, including parking lots, paths, amphitheaters, terraces, and patios are often incorporated into the visitor center complex.

The Antietam National Battlefield Visitor Center embodies all of these design principles and retains their integrity from the period of significance.

Because it was constructed in 1962, more than 50 years ago, the Visitor Center does not need to meet the criteria of "exceptional importance" under Criteria Consideration G. The recommended period of significance is 1962-1963, including its construction, official opening, and the completion of landscaping work around the Visitor Center. While the building has had several additions/ enlargements since its original construction, these represent a natural evolution of the building and have been, for the most part, complementary to the original character of the building. They do not unduly affect its integrity.

Character-Defining Features

Site/Landscape

- Rolling topography with natural limestone outcrops
- Broad open spaces with few trees or large shrubbery resulting from the high level of integrity of the battlefield

Location/Siting

- Set into the hillside at the top of a gentle rise with views out to large portions of the battlefield
- Spatial relationship to the battlefield, Dunker Church and the monuments (expansive views)

Exterior

Massing

- A series of low horizontal forms nestled into the hillside
- The building form as a series of interlocking blocks that step up the small hillside to the observation room
- Massing and form reflecting residential buildings
- Long horizontal lines formed by the walls, roofs, and windows
- Long field stone walls extending beyond the building
- Transparent window walls that contrast with stone walls
- Roofs that connect into stone walls are lower than the stone walls

Texture and Materials

- A very limited palette of materials and colors meant to harmonize with the surrounding landscape, including field stone and wood walls, large windows, and colors ranging from medium brown field stone, to the light gray wood walls and sunscreens, to the pale gray built-up roofing
- Use of local field stone for walls
- Walls of plywood with vertical battens or scoring juxtaposed with large expanses of windows
- Filtered light coming through the sunscreens and falling on windows contrasting with the stone walls

- Poured gray concrete walkways and flagstone observation terrace
- Wood sunscreen

Doors
- Double doors for public spaces with large glass panels
- Utilitarian solid metal doors

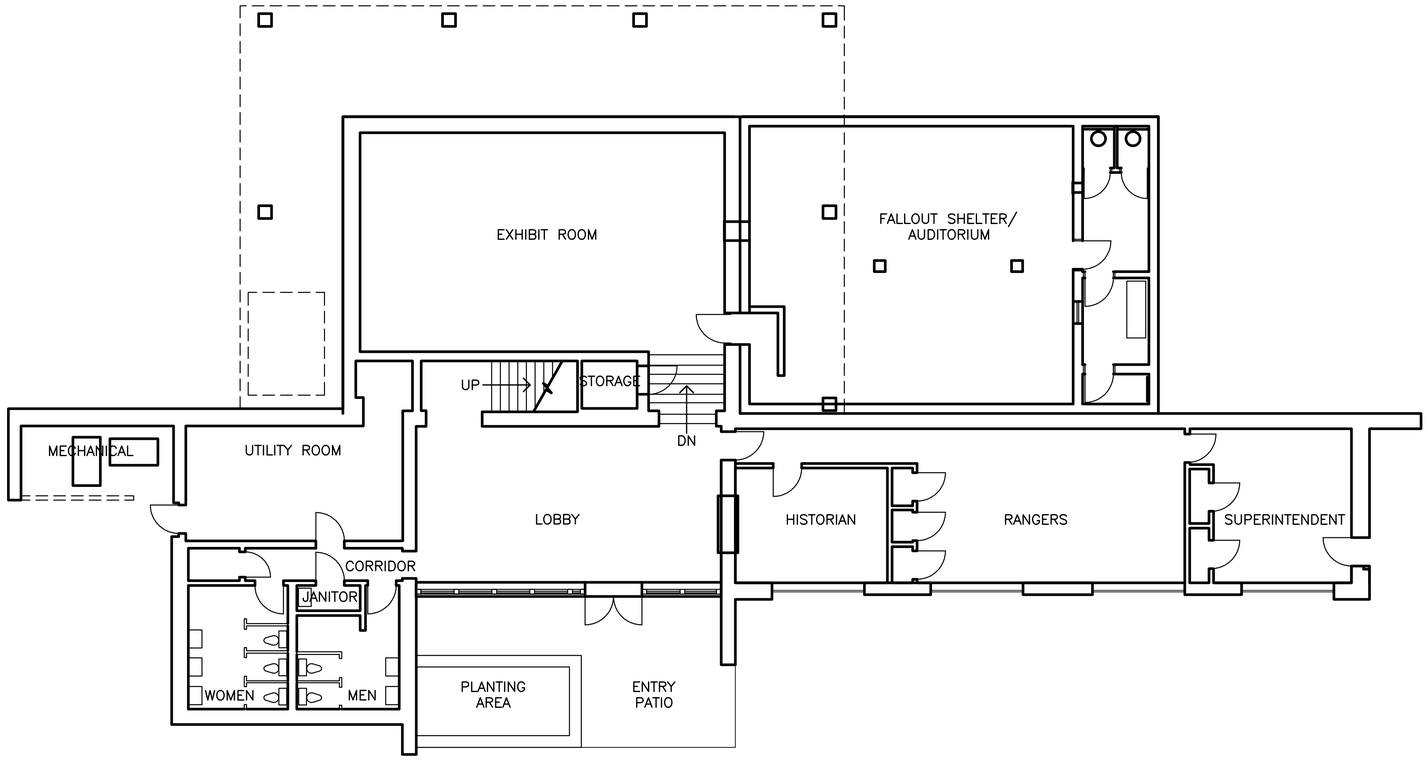
Windows
- Wood windows at observation room with transom windows above the main windows
- Tripled sliding windows (now replaced) at west wall of the administration (bookstore) wing

Terrace
- Flagstone paving
- Round fiberglass planters (currently in storage)

Interior

- Open central lobby that provides direct access to all of the visitor spaces around the lobby
- Central stair at rear of lobby
- Field stone interior walls that carry the theme of stone outside to the interior
- Slate flooring in the lobby
- Carpeted flooring in the other public spaces, except for the restrooms
- Secondary walls of plaster
- Acoustic tile ceilings throughout the building
- Remaining fallout shelter elements
- Observation room base wall with slate coping
- Slate stairs to the observation room

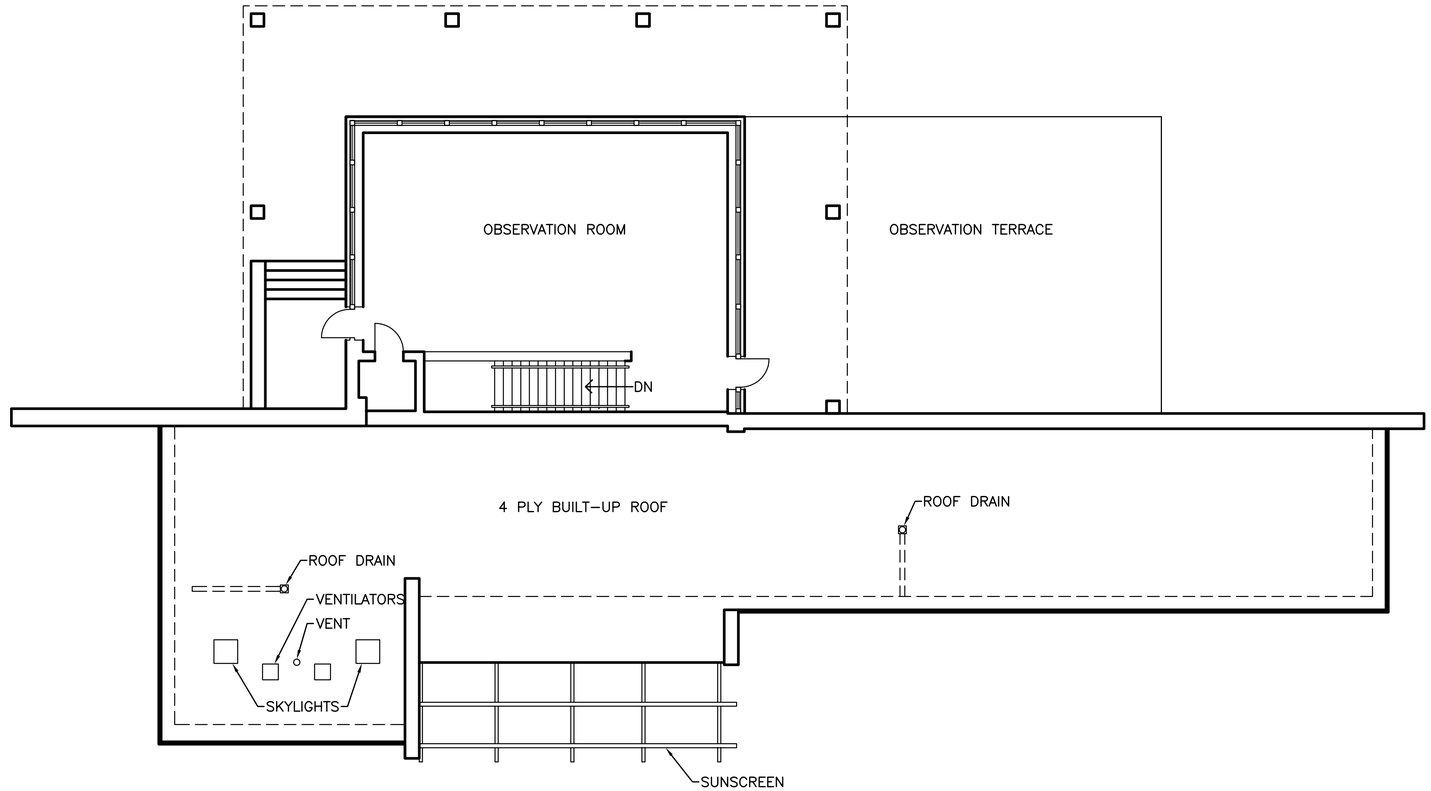
Episode Drawings immediately follow this page.



1/A1 FIRST FLOOR PLAN – 1962
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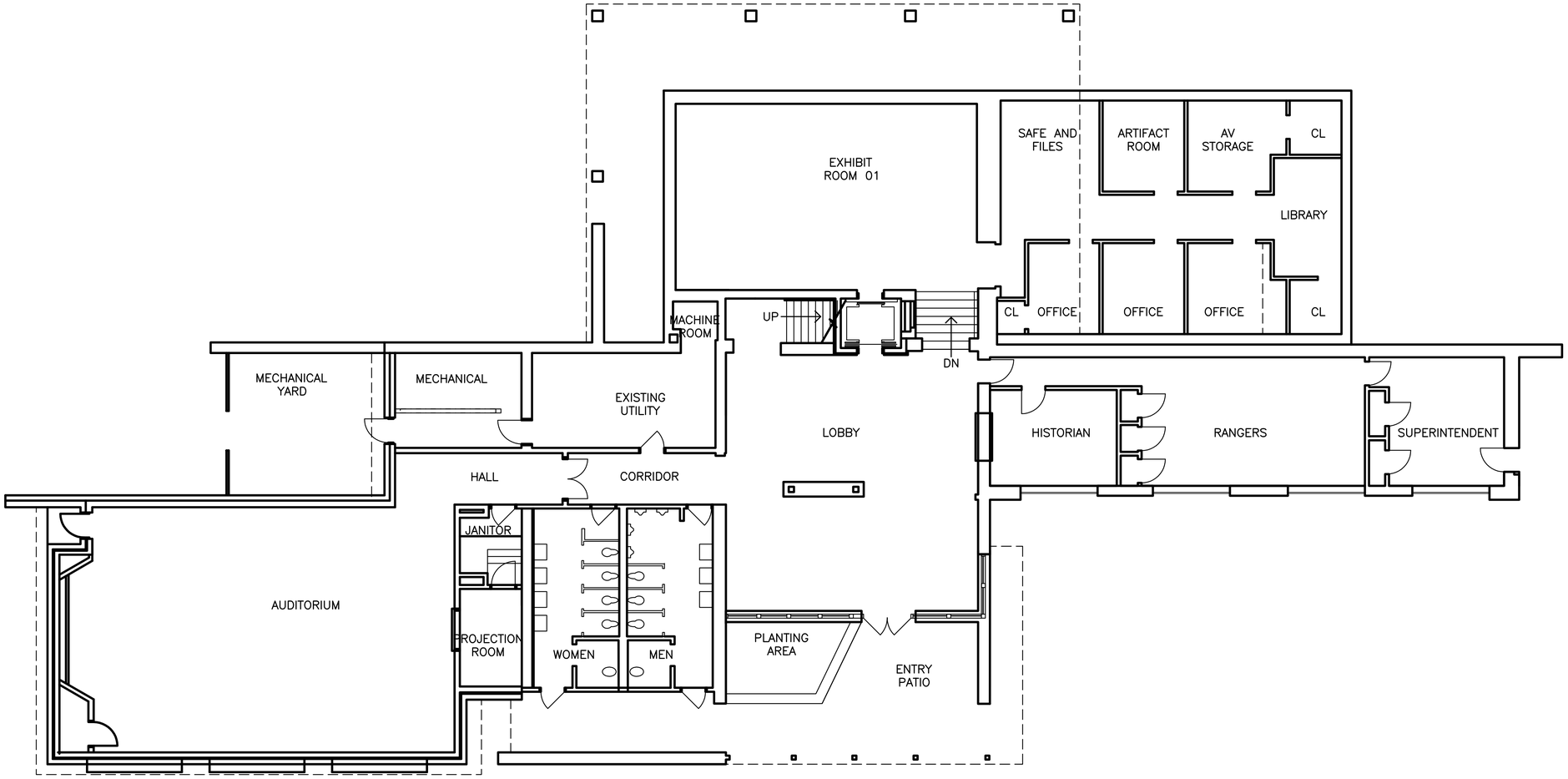
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1/A2 SECOND FLOOR PLAN – 1962
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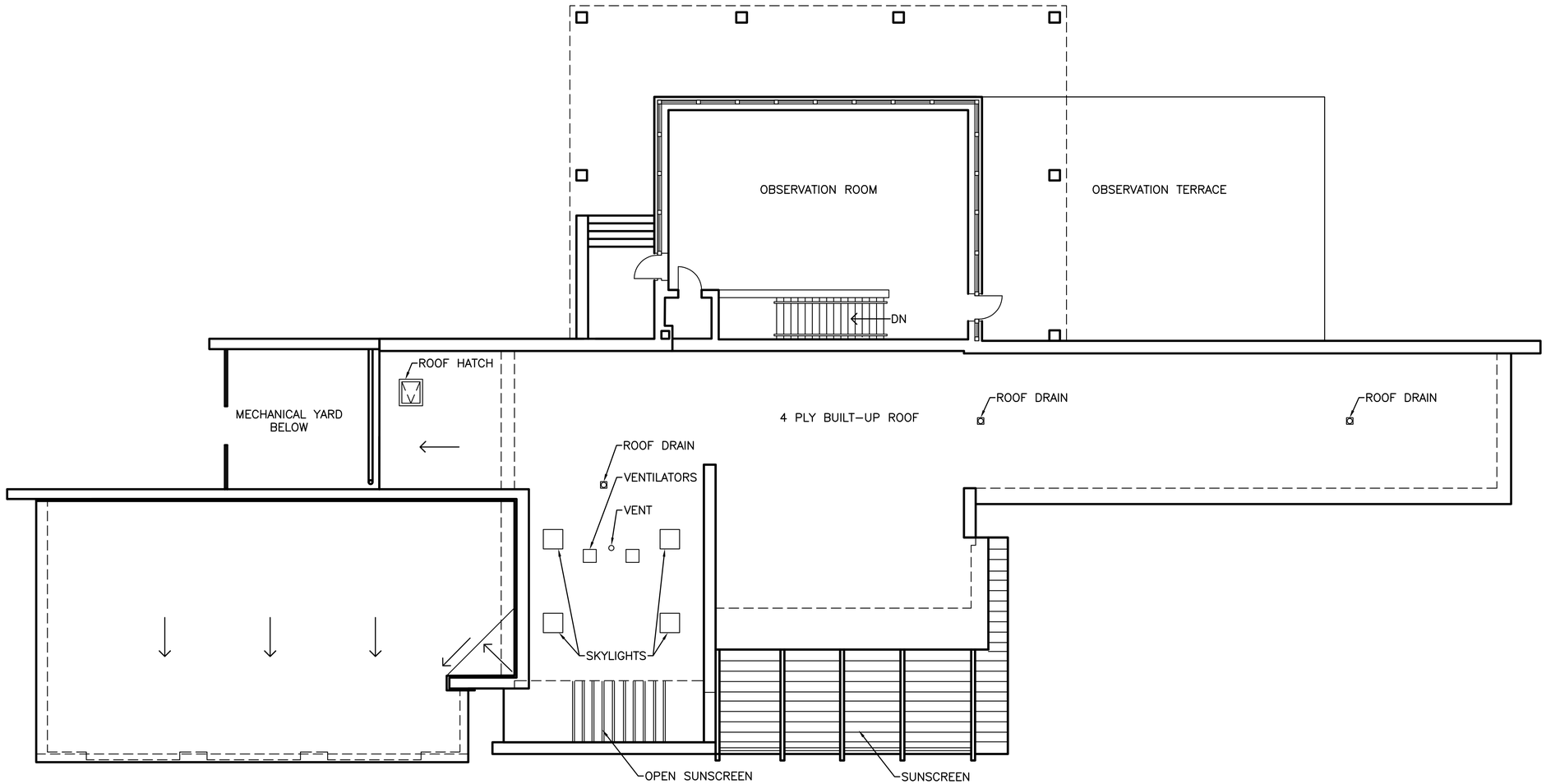
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1 / A3 FIRST FLOOR PLAN – 1979
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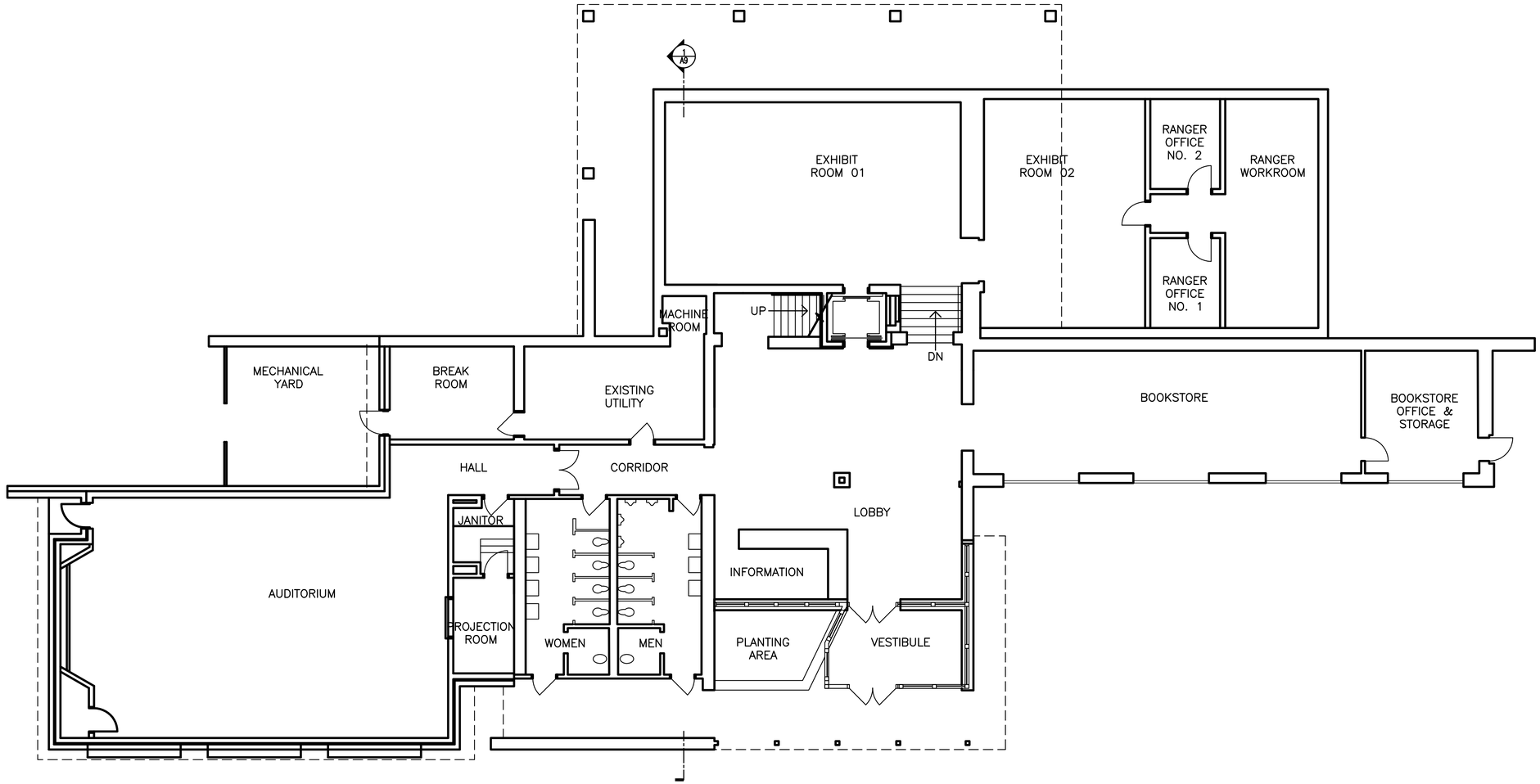
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1/A4 SECOND FLOOR PLAN – 1979
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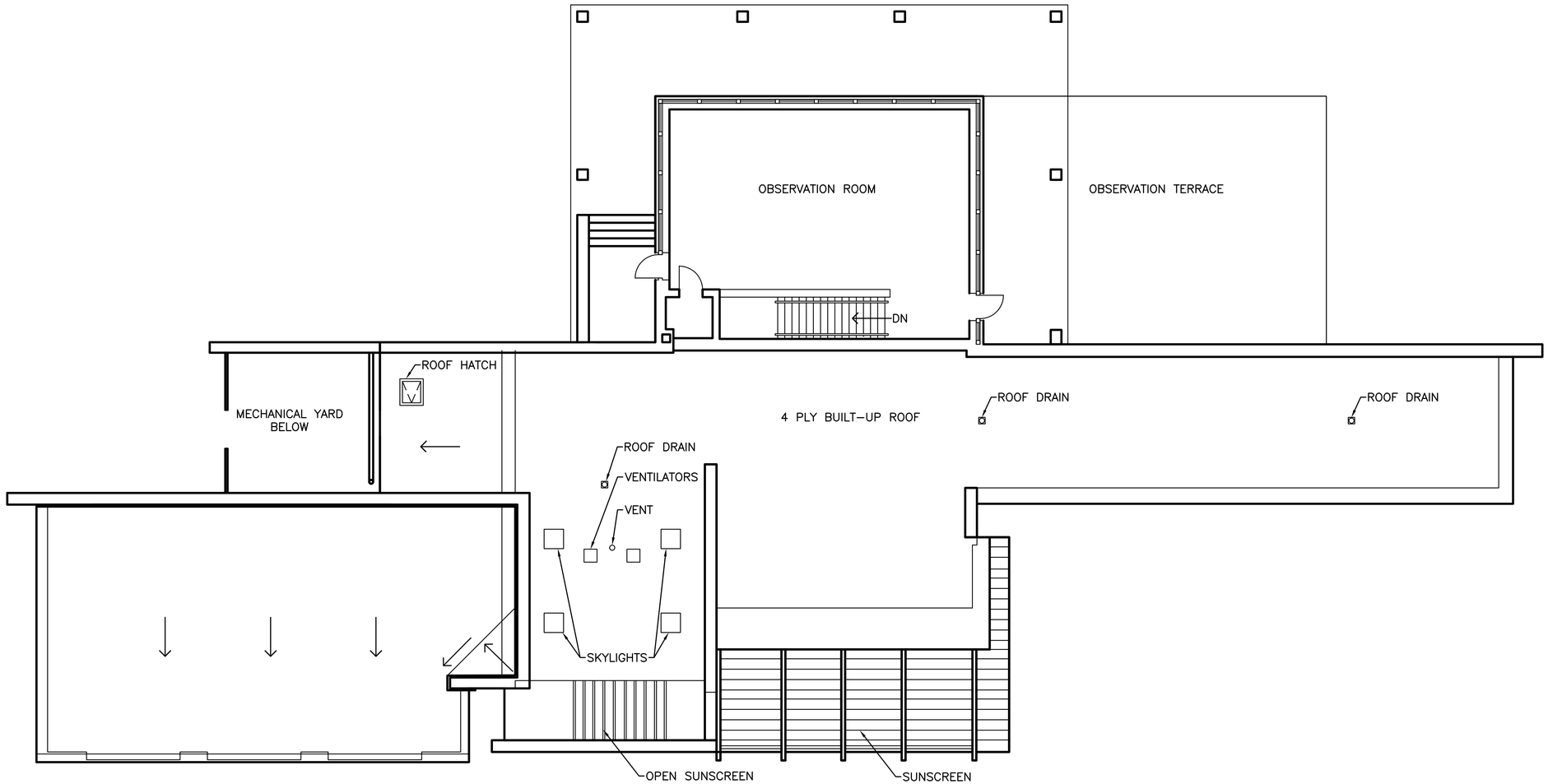
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1 / A5 FIRST FLOOR PLAN – CURRENT
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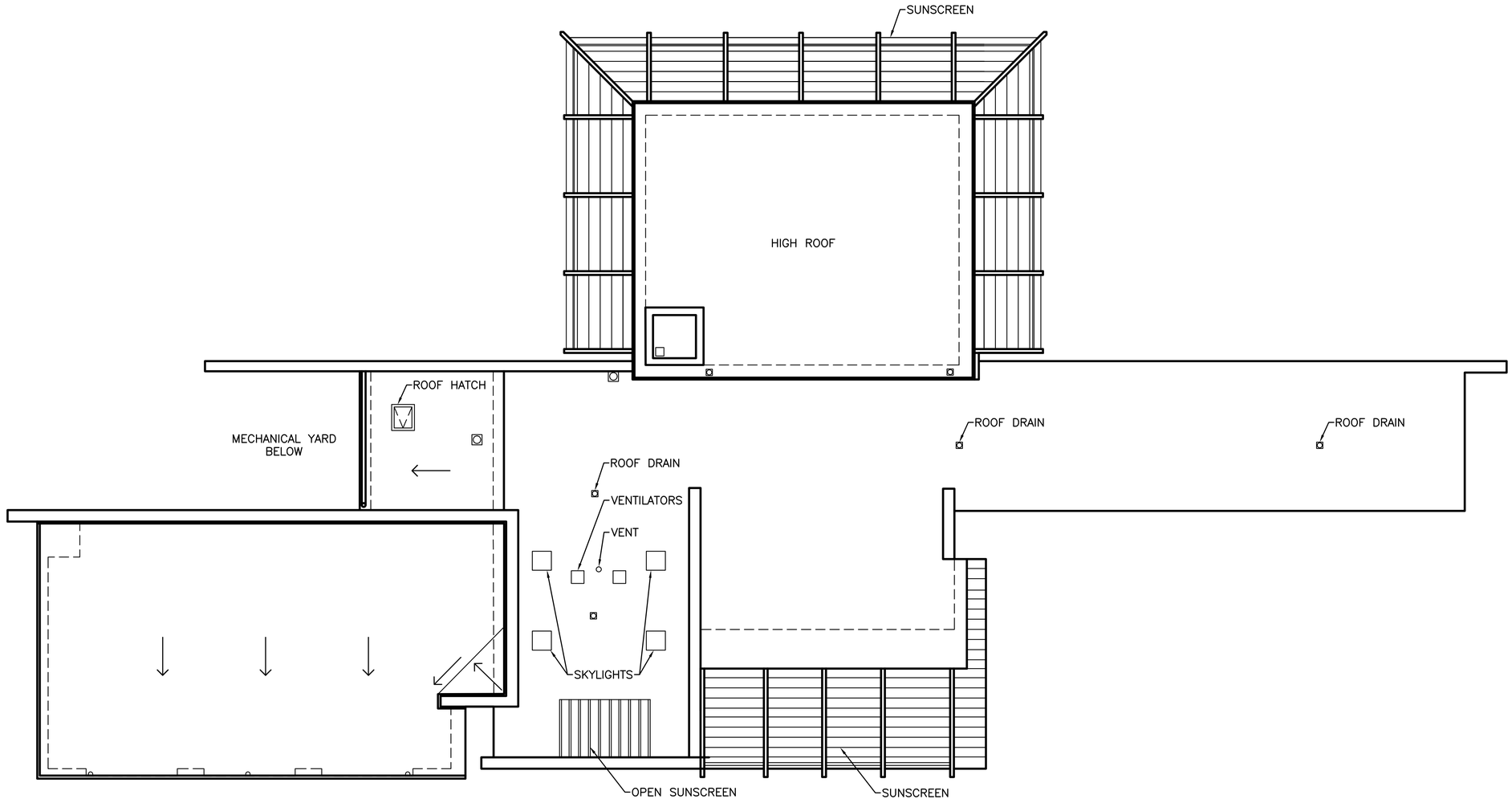
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1/A6 SECOND FLOOR PLAN – CURRENT
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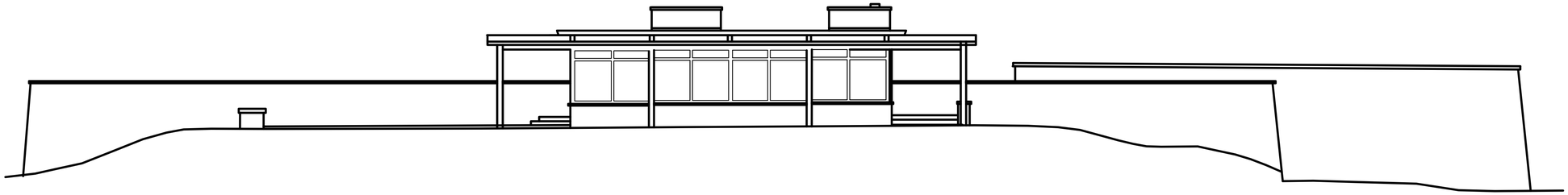
1 / A7 ROOF PLAN
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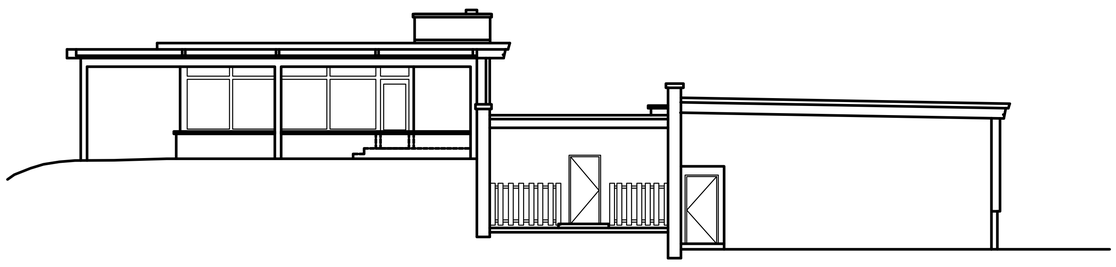
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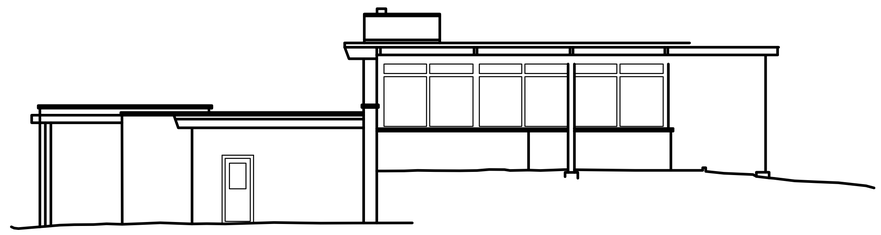
4 / A8 WEST ELEVATION
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3 / A8 EAST ELEVATION
SCALE (A)



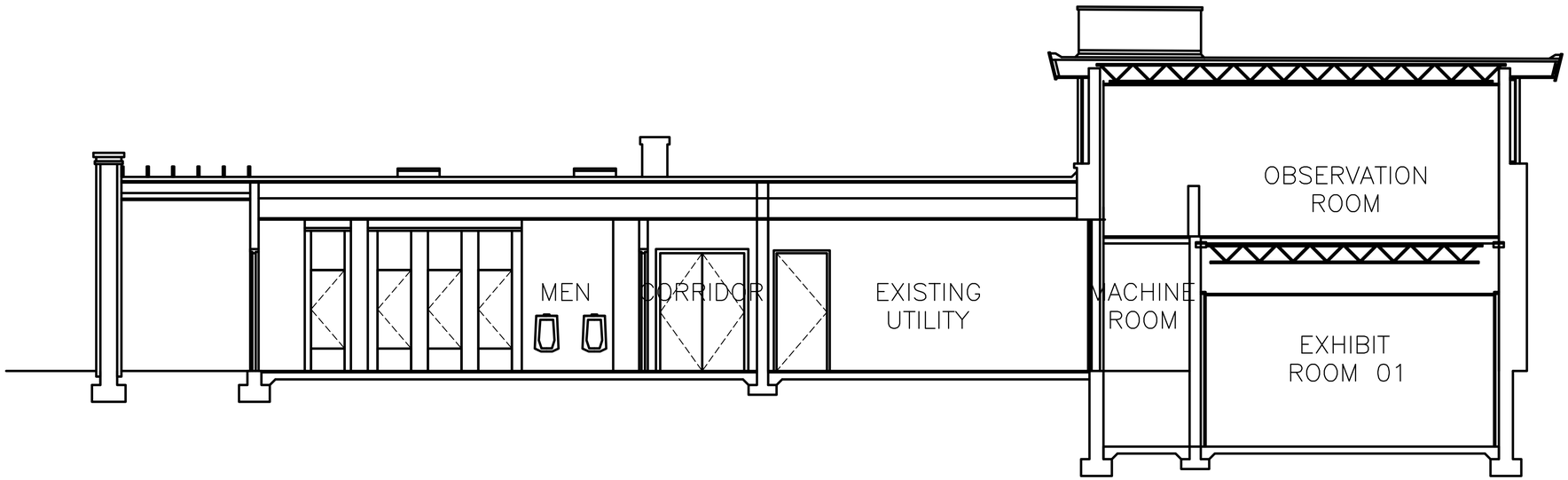
1 / A8 NORTH ELEVATION
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2 / A8 SOUTH ELEVATION
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1 / A9 SECTION

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Chapter 4: Conditions and Systems

Site Context

Antietam National Battlefield (figure 4-1) covers 3,230 acres. The Visitor Center is located off Dunker Church Road, east of the Sharpsburg Pike (MD-65).

The Visitor Center (figure 4-2) is centered on a 25 foot rise above the main visitor parking lot and overlooks the battlefield to the north, east and south (figures 4-3 and 4-4). The building is set into the hill so that only the west elevation is fully seen above grade with the other three elevations partially buried.

The main parking lot for visitors is located to the west and parking for disabled visitors is located adjacent to the large flag pole at the center of the east side of the parking lot (figure 4-5).

Gently ramped walkways lead up to the Visitor Center which is about 11 feet above the parking lot. The ramps do not meet current Architectural Barriers Act Accessibility Standards (ABAAS) as they are too narrow and too steep. The Visitor Center has disabled access restrooms that are available from the exterior near the main entry and from the interior.

Access to the observation room, a level above the main floor, requires traveling around the exterior of the building to the north on paths that do not meet ABAAS. On the north side of the room, a small ramp connects the exterior concrete patio to a landing up a foot at the level of the observation room. The door at this ramp does not meet accessibility standards as it does not have a power assist button and requires manual opening.

The walkways around the visitor parking lot and that lead up to the main entry of the Visitor Center are of poured concrete while those around the perimeter of the Visitor Center are of asphalt. The asphalt is a special mix with an aggregate. A brick walkway extends from the Visitor Center entry to the southwest where a large cannon is located.

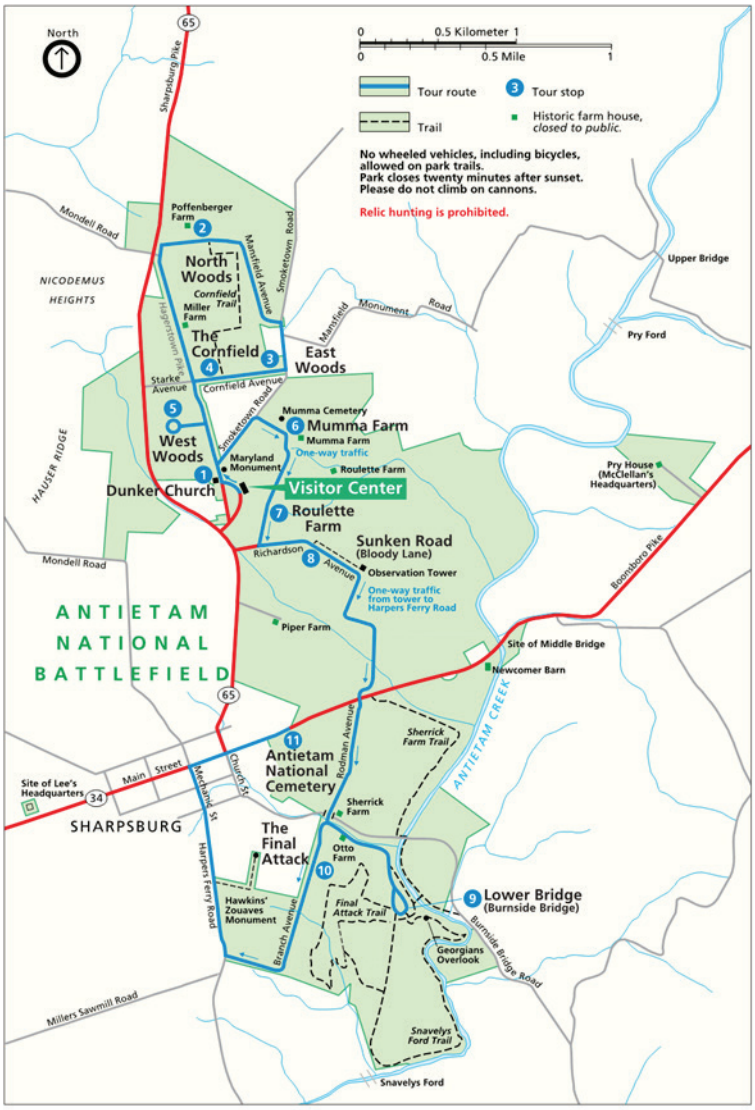


Figure 4-1: Map of Antietam National Battlefield (source: Antietam National Battlefield).

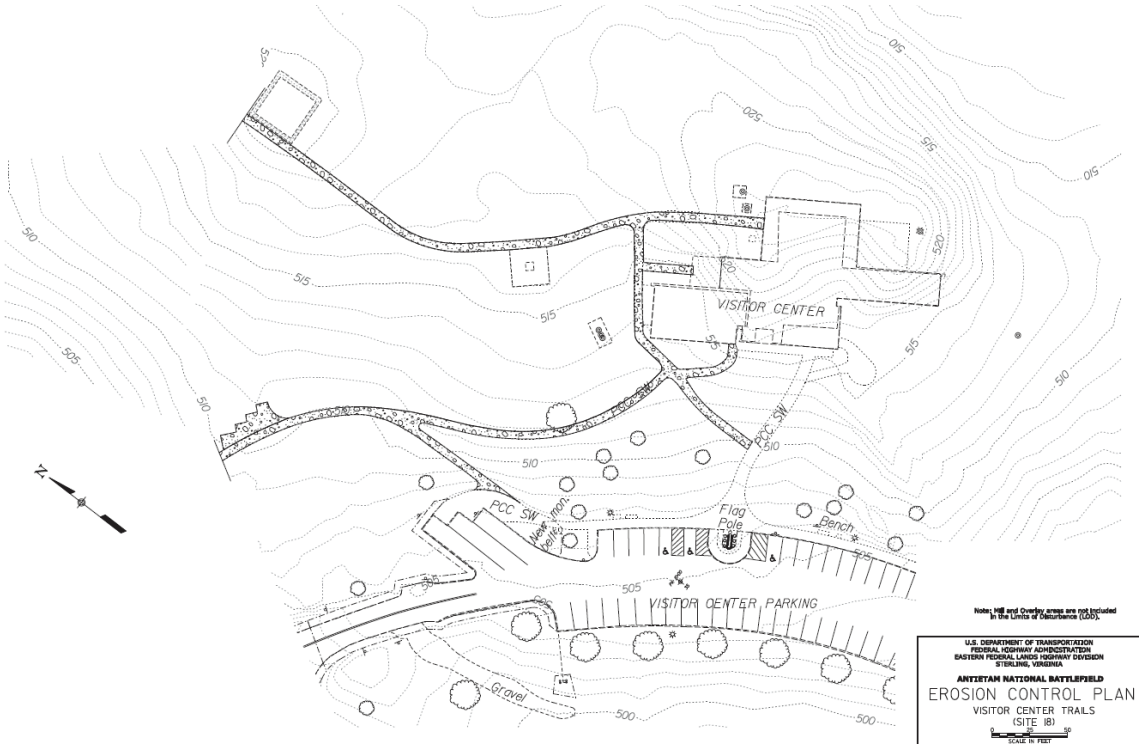


Figure 4-2: Site plan showing Visitor Center, parking, sidewalks, and topography, 2013 (source: Antietam National Battlefield Archives).



Figure 4-3: Antietam National Battlefield looking towards the east from the Visitor Center, January 2017 (source: Quinn Evans Architects).



Figure 4-4: Antietam National Battlefield looking towards the west from the Visitor Center, February 2017 (source: Quinn Evans Architects).



Figure 4-5: Visitor Center parking lot looking southwest, January 2017 (source: Quinn Evans Architects).

Introduction and Modifications

The Visitor Center is the primary location for orienting visitors to the park. It was designed by William Cramp Scheetz, Jr., AIA, a consulting architect from Philadelphia who worked with the Eastern Office of Design and Construction of the National Park Service. The building was originally constructed in 1962 as part of the NPS Mission 66 Program. The original drawings are dated September 1961.

The main level originally had a lobby, offices for a historian, park rangers, the park superintendant, restrooms, and a mechanical room. Half a flight below the main level was an exhibit room.



Figure 4-6: Exterior view of Visitor Center looking northeast (source: Historic American Building Survey).



Figure 4-7: Exterior view of the Visitor Center looking southeast with the auditorium in the foreground (source: Historic American Building Survey).



Figure 4-8: Visitor Center entry with cannon in foreground. View looking northeast (source: Historic American Building Survey).

A limited second floor was located above the exhibit room and served as an observation room. It had a 270 degree view of the battlefield to the north, east and south. A large flagstone terrace was located outside the observation room to the south with flagstone walkways leading around the east and north elevations of the observation room.

Since its construction, the Visitor Center has been modified and added on to numerous times. In 1962, during construction, a fallout shelter was added to the lower level of the Visitor Center, directly to the south of the exhibit room. The drawings are dated April 27, 1962. The fallout shelter doubled as an auditorium. It was later converted to offices and then into an additional exhibit area and three offices connected by a corridor.

In 1973 the lobby was expanded to the west. Around 1972, the large wood screen that originally separated the lobby from the stair to the observation room was covered with drywall on the stair side. In 1996, an exhibit wall was installed in front of the lobby side of the wall, which also hides the disabled access lift to the exhibit room.

In 1977-78 the restrooms were expanded and portions of the landscaping were altered. Originally there were two toilets and a urinal in the men's room and three toilets in the women's room. The expansion added a disabled access toilet to each restroom and an additional toilet and three urinals to the men's room and three additional toilets to the women's room. In addition, each restroom now had access from the exterior as well as access from the interior of the building. This meant that the restrooms could remain open when the building was closed. Landscaping changes included adding several trees and replacing sod. The

drawings for this modification were done by the National Park Service and are dated July, 5 1977 while the work was carried out in early 1978 (see chronology, above).

In 1979-80 the building was expanded to the north to accommodate a new auditorium with 131 seats as well as a platform to the rear for wheelchairs. As part of this expansion, the main hall to the lobby was lengthened and the existing mechanical room was reconfigured. A new elevator connecting the three floors was included as an alternate but was never built. The architect for this expansion was Bushy Associates, Inc. from Hagerstown, MD.

A vestibule was added in front of the existing main entry doors providing a buffer from the weather and improved disabled access. No drawings have been located for this addition but it was completed in 2002 by park staff.

The roof was replaced in 1982 and again in 2003-2004. The drawings for this work, dated January 2002, were prepared by the National Park Service.

Form

The Visitor Center is a Modernist, also called “Park Service Modern,” building with long flat roofs with extensive wood sunscreen framing. The bulk of the walls are reinforced concrete block faced with uncoursed field stone. Other sections are constructed of wood framing covered with plywood siding and large windows. The overall feeling is that of a small residence nestled into a hillside. The west elevation of the auditorium has three large wood panels set out from the field stone wall faced with vertical plywood paneling. This breaks up the large field stone wall behind the panels and helps visually connect the north and south portions of the west side of the building.

Materials

The building is primarily constructed of concrete block on a concrete foundation. The block is faced with uncoursed field stone and the walls have flagstone copings. The long north-south field stone walls extend beyond the east-west walls becoming freestanding elements. Some walls of the building are constructed of wood framing with large fixed panes of wood-framed glass. The building has a series of gently sloping built-up flat roofs.

Features

The observation room has a 270 degree view overlooking the battlefield.

Exterior Envelope

Elevations

West Elevation:
The west elevation (figure 4-9) of the Visitor Center serves as the front of the building and the main entry from the visitor parking lot, and primary signage and directories leading to other areas of the battlefield. It is also the only elevation that is not partially concealed by the hillside into which the building is partially buried.

The west elevation consists of two elements, a large auditorium and restroom mass that is faced with stone, and the lobby and bookstore area to the right which is sided with wood and inset with large plate glass windows with wood frames.

At the center of the west elevation is a large stone wall with the restrooms behind. This wall serves as a screen for access to the Visitor Center restrooms from the exterior as well as the backdrop for the primary signage for the Visitor Center. Behind the stone wall, the west wall of the restrooms is faced with vertically grooved (T-111) siding. To the north of the restroom screen wall is the west wall of the auditorium (figure 4-10). This is faced with stone with three projecting rectangular bays faced with plywood boards and vertical battens.



Figure 4-9: Visitor Center west elevation with main entry (right), restroom wall (center) and auditorium (left), January 2017 (source: Quinn Evans Architects).

To the south of the auditorium/restroom is the primary entrance into the Visitor Center. The entry consists of a small wooden vestibule with double aluminum fully glazed doors to the exterior and similar set of doors leading into the lobby. The south leaf of the exterior door set is automated.



Figure 4-10: Auditorium wing, looking southeast, February 2017 (source: Quinn Evans Architects).

To the right (south) of the entry is the wing that houses the bookstore and an office (figure 4-11). The west elevation of the bookstore has four groups of large windows set between plywood walls with applied vertical wood battens. Below the plywood and the windows is a low field stone wall that runs the length of this wing.

Each window opening originally was divided vertically into three parts with the central sash sliding to open the window. Currently, each window opening is divided into two vertical sash that are fixed. It is not known when the window sash were replaced. The three-part sash were in place as late as 1973. Park staff suggest the replacement may have taken place around 2002.



Figure 4-11: Visitor Center west elevation, bookstore wing (right and south wall of lobby (left), looking north, February 2017 (source: Quinn Evans Architects).



Figure 4-12: Main entry, detail looking east, February 2017 (source: Quinn Evans Architects).

Above and to the rear of west elevation is the west wall of the observation room which is faced in the same plywood and battens as the bookstore.

A horizontal sunscreen extends to the west above the entry shed/ vestibule providing a shade for the entry (figure 4-12).

North Elevation:

The north elevation consists of three parts, the observation room, the mechanical yard and the auditorium. The ground floor area below the observation room is hidden by the hillside. The observation room is the most prominent element with fixed wood framed windows extending the full width of the elevation and spanning nearly floor to ceiling.

At the observation roof level (figure 4-13), a horizontal sunscreen extends away from the building protecting the windows from the sun along the north, east, and south sides of the building. A door opens from the north elevation to a short ramp providing access to the concrete walkway below.

To the west of the observation room, one level below and extending farther north than the north line of the observation room, is the mechanical yard with air conditioning and other mechanical units (figure 4-14). A door leads from the north wall of the break room into the mechanical yard. To the west of the mechanical yard, and again extending farther north than the break room wall, is the north end of the auditorium, faced with field stone (figure 4-15) . An emergency exit is located at the east end of the auditorium wall. The roof of the area behind the mechanical yard is four feet above the floor level of the



Figure 4-13: North elevation of observation room, looking south, February 2017 (source: Quinn Evans Architects).



Figure 4-14: Mechanical yard, looking south, February 2017 (source: Quinn Evans Architects).



Figure 4-15: North elevation of auditorium, looking south, February 2017 (source: Quinn Evans Architects).

observation room and the roof above the auditorium is six feet higher than the observation room floor.

Also visible on the north elevation is the end of a small maintenance shed located in the maintenance yard. It is faced with vertically grooved plywood (T-111 siding).

East Elevation:
Much of the east elevation of the building is hidden from view by the hillside (figure 4-15). The most prominent element of this elevation is the east side of the observation room with an array of nearly floor to ceiling windows that extend the full width of the room (figure 4-16). A large sunscreen also extends the length of the room and projects out from the observation room east wall protecting these windows from the sun.

To the south of the observation room is a large flagstone terrace that opens to the east and south. Initially there were large fiberglass planters on the terrace that have now been removed, in part due to the weight they placed on the basement roof below.



Figure 4-16: East elevation overall, looking west, February 2017 (source: Quinn Evans Architects).



Figure 4-17: East elevation, observatory room east wall, looking west, February 2017 (source: Quinn Evans Architects).

To the south of the observation room is the lower floor area that contains offices. It is partially hidden by the hillside and the east wall of this area is faced with field stone. The stone wall rises four feet above the floor line of the observation room.

To the north of the observation room are the mechanical room and the mechanical yard. Beyond this to the north, a small portion of the east elevation of the auditorium is visible. All of these areas are faced in field stone. The mechanical room and mechanical yard extend four feet above the floor line of the observation room while the auditorium extends six feet above the floor line of the observation room.

To the east of the auditorium a long narrow storage shed has been added to the mechanical yard. It has a shed roof and is faced with vertically grooved (T-111) plywood, the same as on the north wall of the shed. The shed is barely visible from the east and is hidden behind a field stone wall and hedges.

South Elevation:
The south elevation is composed of two elements (figure 4-18). On the west is a field stone wall that serves as the south wall of the bookstore and storage room. To the east of this is a wall that is buried behind the hillside and is not visible. Above that wall is the observation room.



Figure 4-18: South elevation overall; bookstore wing on left, observation room on right, January 2017 (source: Quinn Evans Architects).

Extending to the south of the bookstore wall is a short wood fence that screens the mechanical equipment from view from the west. It is approximately five feet high and is painted the same color as the plywood walls.



Figure 4-19: South elevation, terrace and observation room, looking north, February 2017 (source: Quinn Evans Architects).

The sunscreen that extends around the observation room also extends to the south providing shade for the windows on this side of the building. The south side of the observation room has an exit door to the exterior with small set of stairs leading to a large flagstone patio (figure 4-19). The patio is one foot below the observation room floor level.

Roof (and Drainage)

The Visitor Center has four different roof levels, each very similar in height to each other (figures 4-21 and 4-22). All of the roofs are flat built-up roofs with few penetrations and all of the roofs are sloped slightly to drain to perimeter gutters with downspouts,



Figure 4-20: South elevation, terrace walk and sunscreen looking south, February 2017 (source: Quinn Evans Architects).

with the exception of the restroom roof, which slopes to two internal downspouts.

The highest roof covers the observation room and it is approximately 17 feet 6 inches above the main level finish floor. It has two downspouts at the northeast and southeast corners of the roof. These connect to underground gutter extensions which daylight in the lawn to the south of the building.

The auditorium roof is approximately 15 feet above the main finish floor. The auditorium originally had recessed gutters on the west side which were replaced with externally hung gutters in 2002. Along the west side of the roof three downspouts are located to the left of the three wood screen panels. These downspouts lead to splashblocks at grade.

The roof covering the bookstore, lobby and restrooms is approximately 12 feet 6 inches above the main finish floor. There are four small skylights centered over the restrooms on this roof. The former office/current bookstore wing originally had two internal downspouts which were capped and abandoned when the roof was replaced in 2002. Downspouts are located at the northwest and southwest corners of this roof (figure 4-23). The northwest downspout has become disconnected from the drain leading underground.



Figure 4-21: View of the bookstore roof with the auditorium roof in the right distance. View looking northwest. February 2017 (source: Quinn Evans Architects).

A small roof covers the mechanical room which is approximately 14 feet above the main level finished floor (figure 4-24). This roof has a hatch leading down into the mechanical room. A gutter runs along the north edge of this roof and a downspout is located at the northeast corner of the roof.



Figure 4-23: Typical downspout at south end of the bookstore wing. View looking towards the east. February 2017 (source: Quinn Evans Architects).



Figure 4-22: Roof over restrooms, looking west toward entry, February 2017 (source: Quinn Evans Architects).

The small storage shed in the mechanical yard has a long sloped roof pitched to the east and covered with asphalt shingles.



Figure 4-24: View of mechanical ducts and auditorium roof. View looking northwest.February 2017 (source: Quinn Evans Architects).

Sunscreens

The Visitor Center has three sunscreen systems providing sun protection for the many windows in the building (figures 4-25 and 4-26). At the main entry facing west, a large horizontal sunscreen extends out from the building approximately 17 feet and is about 32 feet wide. Vertical slats running north–south occur 16 inches apart with beams every eight feet. The wood frame is supported every eight feet by steel posts with wood cladding.

To the north, another series of similar vertical slats were installed over the walkway at the exterior doors to the restrooms. These slats run east–west and are supported by the roof framing.

At the observation room a sunscreen extends along three sides of the room providing sun protection to the north, east and south windows. The wood frame extends ten feet out from the building and the vertical slats run parallel to the walls. The frame is supported by columns spaced along the length of the frame on all three sides.

Entrance Systems

The main entrance to the Visitor Center is through a set of glazed double doors installed in a shed vestibule addition that was constructed to create an airlock and accessible space between



Figure 4-25: View of sunscreen at the northeast corner of the observation room. View looking southwest. February 2017 (source: Quinn Evans Architects).



Figure 4-26: View of sunscreen at observation room looking northeast; note areas of deteriorating wood. February 2017 (source: Quinn Evans Architects).

the interior and the outside (figure 4-27). On the interior the vestibule has another set of double doors that lead into the lobby.

The vestibule shed was added under the existing sunscreen system and while it is of the same materials as other elements of the Visitor Center, it has a very temporary look at odds with the character of the main building.

To the left of the main entrance, behind a stone screen wall, two doors provide access to the two restrooms in the Visitor Center, one for the men's room and one for the women's room. These are solid metal doors.



Figure 4-27: Entry vestibule, looking southeast. February 2017 (source: Quinn Evans Architects).

Two additional public entrances are located at the north and south ends of the observation room on the upper level. The north door opens to a short ramp that leads down to the concrete walkway surrounding the room (figure 4-28). The south door leads to two steps that also go down to the walkway and to a large flagstone terrace to the south of the observation room (figure 4-29). Both of these wood doors have a central glass panel. The observation room is a foot higher than the concrete walkway that surrounds this room.

An emergency exit door leads out from the auditorium to the north side of the Visitor Center.



Figure 4-28: Ramp at north side of observation room, looking west, February 2017 (source: Quinn Evans Architects).



Figure 4-29: South entrance to the observation room, looking west, February 2017 (source: Quinn Evans Architects).

One door for NPS staff only is located at the south end of the Visitor Center leading from the bookstore storage area and another is located at the north end of the building leading out from the break room.

Windows

Over time, many of the original windows in the Visitor Center have been replaced. The original windows were single pane and constructed on site. The new windows are typically double paned and are prebuilt units that have been inserted into the walls.

The original windows in the entry and lobby have been replaced with double pane windows.

Each of the four sets of windows in the bookstore originally had three tall single pane aluminum windows. The central sash slid to the side for ventilation. Each opening today now has two prebuilt double glazed windows with fixed double panes (figure 4-31).

The original windows at the main entry remain and they have transoms above fixed panes, some of which are operable (figure 4-30).

The windows at the new shed vestibule are fixed windows that are similar to those in the lobby.

The observation room originally had single pane fixed windows with transoms above. The windows have been replaced with double glazed prebuilt windows. The transom windows are also fixed pane double glazed windows.



Figure 4-30: Windows at lobby, looking east, February 2017 (source: Quinn Evans Architects).



Figure 4-31: Replacement windows at bookstore wing, looking east, February 2017 (source: Quinn Evans Architects).

All of the windows in the Visitor Center are set in wood frames.

Exterior Existing Conditions

Generally, the exterior of the Visitor Center is in very good condition.

Overall the field stone walls are in very good condition. A few of limited areas of the field stone walls have biological growth.

Several of the posts holding up the sunscreen at the observation room are supported on fieldstone and cement plates which are

crumbling (figure 4-32). The bases of some of the columns are rotting as well.

The wood sunscreen system at the observation room and portions of the wood soffit have areas of rotting wood.

The downspout at the southwest corner of the bookstore has become disconnected from the site drain; this was communicated to staff during the survey.

Two of the downspouts at the auditorium west elevation have missing splashblocks.

A flagstone wall cap at the south end of the observation room is loose.



Figure 4-32: Post at the observation room north side exterior showing damaged field stone base, February 2017 (source: Quinn Evans Architects).

Interior Architecture and Finishes

The Visitor Center has a limited palette of materials and colors. The building is made up of field stone walls, plywood panels with either vertical battens or vertical scoring on the exterior, large windows, and several doors.

The color palette for the Visitor Center is muted, primarily being tan brown stones with light and medium gray walls. Graphics and displays have darker gray and black colors. Floors are dark gray slate and light carpet with some vinyl tile floors.

Main Level

Entry Vestibule

The main entry vestibule (figure 4-33) was added to the Visitor Center around 2002 to replace an earlier portable vestibule; the work was done by park staff. It provides an air-lock between the interior and the exterior to mitigate dramatic changes in temperature when it is either very hot or very cold outside. While the vestibule temporarily addressed environmental and accessibility issues and used similar materials and colors to match the main building, the design is not generally sympathetic to the architecture of the rest of the Visitor Center. The structure is now over 15 years old, and is beginning to deteriorate, particularly the wood siding and sills.



Figure 4-33: Entry vestibule, interior looking north, February 2017 (source: Quinn Evans Architects).

Lobby

The lobby is the center of the Visitor Center around which the other elements of the building program revolve. The registration and Information desk is to the left (north) when entering the building. The auditorium, exhibit rooms, observation room and bookstore are all accessed through the lobby (figures 4-34 to 4-37).



Figure 4-34: Lobby looking east, February 2017 (source: Quinn Evans Architects).



Figure 4-35: Lobby looking northwest, February 2017 (source: Quinn Evans Architects).

The floor is gray-green slate and the all of the walls are stone except for the entry wall, which is made up of nearly floor to ceiling windows, and the entry doors. The area around the Information desk is carpeted.

The ceiling is a lay-in acoustic tile painted dark gray. Recessed light fixtures and air conditioning registers are located in the ceiling.

An exhibit wall is installed in front of the east wall, facing the entry doors (figure 4-34). Currently this features a large image of the battlefield, and other displays are found on the north and south walls. The exhibit wall shields the view of the accessible lift from the rest of the lobby. Behind the exhibit wall, the wall between the lobby and the observation level was originally



Figure 4-36: View of lobby looking to the northeast. Auditorium and restrooms are to the left, stairs to the observation room at the right. February 2017 (source: Quinn Evans Architects).



Figure 4-37: View from the lobby looking southeast toward the stair down to the exhibit rooms. The bookstore door is to the right. February 2017 (source: Quinn Evans Architects).

an open wood screen. This is now covered (or replaced) with drywall on both sides.

A small seating area is located at the southwest corner of the lobby. An 8 inch by 8 inch column is located near the center of the lobby supporting part of the roof structure above. The column has a steel I beam on the interior and is faced with wood. This column does not appear in the drawings for the Visitor Center but is likely located at the original exterior entry wall of the lobby before it was extended. When the lobby was extended, two wooden columns held the load at this location, but it was later determined that a single steel column could carry the load. The replacement was made in 1996.



Figure 4-38: View from the lobby into the bookstore, looking south, February 2017 (source: Quinn Evans Architects).



Figure 4-39: Bookstore looking north, February 2017 (source: Quinn Evans Architects).

To the rear of the lobby, a wood screen originally separated the lobby from the stair leading up to the observation room. This has been covered with drywall.

Bookstore

To the south of the lobby, the bookstore is accessed through a large opening in one of the stone walls (figures 4-38 and 4-39). This is not the original opening, which was farther to the east along the wall when this wing housed the administrative/office functions. The original opening can be seen in the bookstore where it now serves as shelving (figure 4-40). The bookstore is secured by an expandable gate.



Figure 4-40: Bookstore entrance looking northwest. To the right is the original office opening, now a bookshelf, February 2017 (source: Quinn Evans Architects).



Figure 4-41: Bookstore office and storage area, looking southwest, February 2017 (source: Quinn Evans Architects).

The west wall of the bookstore has four large window openings spaced along the wall. Each opening is divided into two units. The east wall and south walls are faced with a floor to ceiling display shelving system.

The ceiling is lay-in acoustic tile painted off white and the floor is carpeted. The room is illuminated by recessed 2 foot by 2 foot fluorescent light fixtures and track lighting that runs the length of the bookshop.

Bookstore Office & Storage

The bookstore office and storage area (figures 4-41 and 4-42) has plaster walls on the north and south, a plywood panel wall on the east and a large window wall to the west. The room has mauve carpet flooring and a 2 foot by 4 foot lay-in acoustic tile



Figure 4-42: Bookstore office and storage area, looking east, February 2017 (source: Quinn Evans Architects).



Figure 4-43: Lobby hall, looking north, February 2017 (source: Quinn Evans Architects).

ceiling with recessed fluorescent light fixtures. A door to the exterior is located on the south wall.

Lobby Hall

To the north of the lobby, the lobby hall leads to the restrooms to the west, and the mechanical room and break room to the east (figure 4-43). Double doors at the end of the hall lead to the auditorium. The lobby slate flooring continues into the hall.

The walls and ceiling are plaster painted white. Hall lighting consists of round recessed light fixtures.



Figure 4-45: Janitor room looking west, February 2017 (source: Quinn Evans Architects).



Figure 4-46: Projection room looking west, February 2017 (source: Quinn Evans Architects).



Figure 4-44: Auditorium hall, looking south, February 2017 (source: Quinn Evans Architects).



Figure 4-47: Efflorescence on the west wall of the janitor room, February 2017 (source: Quinn Evans Architects).

Auditorium Hall

Beyond the lobby hall the auditorium hall leads into the auditorium (figure 4-44). The walls are lined with floor to ceiling vertical strips of wood that are lightly stained. The flooring is light gray carpet and the ceiling is horizontal strips of wood painted a medium brown. Recessed light fixtures illuminate the hall. At the end of the hall a concrete block wall leads into the auditorium.

Janitor Room

The janitor room (figure 4-45) is a small closet off the auditorium hall that has a slop sink and stairs leading up to the projection room. The north wall is faced in natural stone while the other three walls are concrete block painted pale yellow. The flooring



Figure 4-48: Typical restroom (women's room), looking east, February 2017 (source: Quinn Evans Architects).

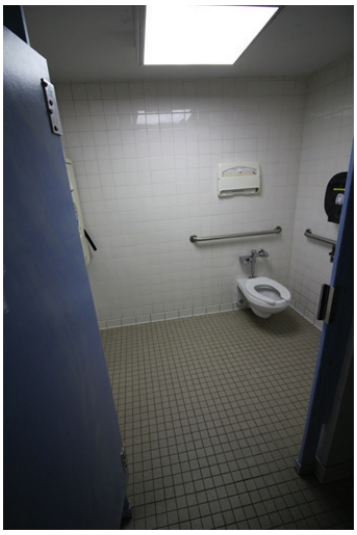


Figure 4-49: Typical disabled restroom stall looking northeast, February 2017 (source: Quinn Evans Architects).

is dark brown vinyl tile squares and the ceiling is 2 foot by 4 foot acoustic lay-in tiles painted white. Lighting is provided by a two surface mounted fluorescent light fixtures.

Projection Room

The projection room (figure 4-46) has one wall that is faced in natural stone while the other three walls are concrete block painted pale yellow. The flooring is dark brown vinyl tile squares and the ceiling is 2 foot by 4 foot acoustic lay-in tiles painted white. Lighting is provided by two surface-mounted circular light fixtures. The room has a counter running the length of the north wall.

Men's Room

The men's room walls are faced in 4 inch by 4 inch white tiles and 2 inch by 2 inch tan flooring tiles. The ceiling is plaster painted white. Two square skylights provide light from the exterior. Two 2 foot by 2 foot surface-mounted fluorescent light fixtures are mounted on the ceiling. There are three toilet stalls with fiberglass composite partitions and four urinals. A separate disabled access toilet stall is available in the restroom. Three sinks are located along one wall with mirrors above. There are no floor drains in the restroom (as required by code) and the sprinkler heads have been compromised by overpainting.

Women's Room

The women's room (figure 4-48) walls are faced in 4 inch by 4 inch white tiles and 2 inch by 2 inch tan flooring tiles. The ceiling is plaster painted white. Two square skylights provide light from the exterior. Two 2 foot by 2 foot surface mounted fluorescent light fixtures are mounted on the ceiling. The restroom has four toilet stalls with fiberglass composite partitions. A separate disabled access toilet stall is available in the restroom (figure 4-49). Three sinks are located along one wall with mirrors



Figure 4-50: Mechanical room, looking south, February 2017 (source: Quinn Evans Architects).



Figure 4-51: Break room, looking south, February 2017 (source: Quinn Evans Architects).

above. There are no floor drains in the restroom (as required by code) and the sprinkler heads have been compromised by overpainting.

Mechanical Room

The mechanical room (figure 4-50) walls are concrete block painted white. All of the walls have many pieces of mechanical equipment attached to them. The entire room is filled with electrical circuit breakers, telephone equipment, fire alarm panels, a water heater, furnace, and air conditioning equipment. The flooring is concrete.

The mechanical rooms are not explosion proof and are not fire-code compliant. The sprinklers have been compromised by the



Figure 4-52: Auditorium, looking north, February 2017 (source: Quinn Evans Architects).



Figure 4-53: Auditorium, looking south, February 2017 (source: Quinn Evans Architects).

placement of HVAC ductwork and there are large penetrations through the walls.

Break Room

The break room (figure 4-51) is faced with stone on the south and east walls, plywood paneling on the west wall and a plaster wall on the north wall. This wall has a door leading to the exterior. The flooring is tan vinyl tile squares. The ceiling is 2 foot by 2 foot white acoustic tiles. Many of which are stained from leaks. Fluorescent light fixtures are recessed in the ceiling.



Figure 4-54: Detail of auditorium wall with carpet base below, February 2017 (source: Quinn Evans Architects).

A counter with cabinets below runs the full length of the east wall and for part of the south wall. The room has a sink, refrigerator, and microwave oven.

A metal door leads to the exterior mechanical yard on the north side of the room.

Auditorium

The auditorium seats 131 people in 11 rows of seats. The seating frames are black plastic and the seat backs are light gray fabric. The flooring slopes towards a movie screen at the north end of the room (figures 4-52 and 4-53). The circulating area around the seating is carpeted and the flooring under the seats is vinyl tile. The side walls are faced in concrete block with a split face finish in a light tan color (figure 4-54). The rear wall is floor to ceiling vertical strips of lightly stained wood. A projection opening is located high on this wall. The front wall is covered in a tan fabric. The main access to the auditorium is through two wood doors at the south end of the auditorium. At the north end is a wood door to a closet and a metal door at the northeast corner which is an exit.



Figure 4-55: Stair to observation room, looking south, February 2017 (source: Quinn Evans Architects).

The ceiling consists of medium brown wood strips running across the width of the room. Lighting is recessed circular light fixtures. Four ceiling fans are located at the corners of the seating area.

The doors to the auditorium from the lobby and the single door exiting the auditorium to the north all meet disabled access requirements.



Figure 4-56: Stair to observation room, looking north, February 2017 (source: Quinn Evans Architects).



Figure 4-57: Observation room, looking south, February 2017 (source: Quinn Evans Architects).



Figure 4-58: Observation room, looking north, February 2017 (source: Quinn Evans Architects).

Upper Level

Stair to Observation Room

On the east side of the lobby, a stair leads up to the observation room (figures 4-55 and 4-56). The stair has slate risers and treads with plaster walls on each side. Hand railings are located on each side as well.

Observation Room

The observation room (figures 4-57 and 4-58) provides a 270 degree view of the battlefield to the north, east, and south. The west wall is plaster painted white while the other three walls have nearly floor to ceiling windows located above a short knee wall



Figure 4-59: Observation room closet, looking west, February 2017 (source: Quinn Evans Architects).



Figure 4-60: Exhibit room no. 1, looking northeast, February 2017 (source: Quinn Evans Architects).



Figure 4-61: Exhibit room no. 1, looking southwest, February 2017 (source: Quinn Evans Architects).



Figure 4-62: ADA elevator, at lobby level looking northeast, February 2017 (source: Quinn Evans Architects).

with a slate seating surface. The knee walls also have grills for heating and cooling. Each of the windows has a transom window above.

The flooring is light gray carpet over composite flooring and the ceiling is a 2 foot by 2 foot lay-in acoustic tiles painted white. Lighting is provided by 2 foot by 2 foot recessed fluorescent light fixtures.

Eight wood benches are located in the center of the room.

The observation room has two exits to the exterior. The one to the north leads to a short ramp that goes down a foot to the concrete walkway that surrounds the north and east sides of the



Figure 4-64: Exhibit Room No. 2, looking southwest (door to ranger offices at center left), February 2017 (source: Quinn Evans Architects).



Figure 4-63: Opening from Exhibit Room No. 1 to Exhibit Room No. 2, looking south, February 2017 (source: Quinn Evans Architects).

observation room. The south door leads to a landing with two steps down to the large south patio. Both exterior doors meet accessibility standards.

Observation Room Closet

A small closet (figure 4-59) is located at the northwest corner of the observation room. The floor is vinyl tile and the walls are concrete block. There is no ceiling.

Lower Level

Exhibit Room No. 1

Exhibit Room No. 1 (figures 4-60 and 4-61) is half a level below the main lobby level and is accessed by stairs at the southeast corner of the lobby. Near the bottom of the stairs is a black laminate wall on which an exhibit photo panel is mounted. Deterioration is found on the back of this wall where it meets the carpet and an adjoining wall. The exhibit room walls are painted gray-green and are mounted with large paintings. The floor is covered in light gray carpet with a black vinyl base. The ceiling is 2 foot by 2 foot acoustic tiles painted black with round recessed light fixtures and track lighting.

Exhibits are mounted in light gray display cases and are set parallel to the walls, but not attached. A black laminate wall in the center of the room currently supports a medal of honor exhibit case and several exhibit panels.

The west wall has a disabled access lift that has limited head height and does not meet ABAAS requirements (figure 4-62).

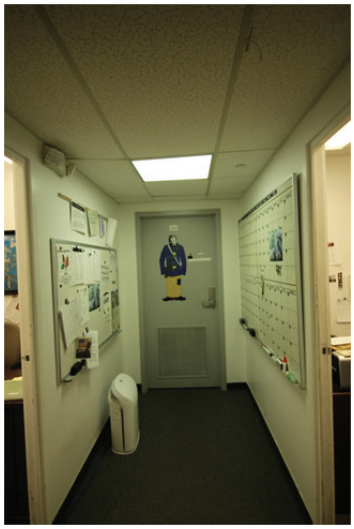


Figure 4-65: Ranger office hall looking north, February 2017 (source: Quinn Evans Architects).

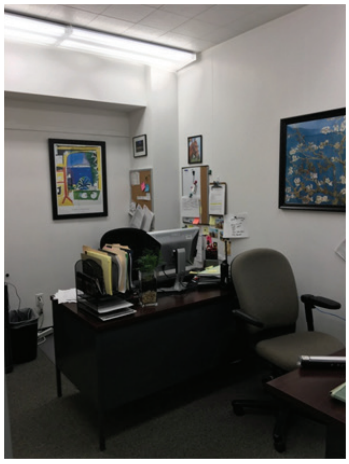


Figure 4-66: Ranger office No. 1 looking northwest, February 2017 (source: Quinn Evans Architects).



Figure 4-67: Ranger office No. 2 looking northeast, February 2017 (source: Quinn Evans Architects).



Figure 4-68: Ranger workroom looking northeast, February 2017 (source: Quinn Evans Architects).

Exhibit Room No. 2

Exhibit Room No. 2 (figures 4-63 and 4-64) is to the south and immediately adjacent to Exhibit Room No. 1. It is also half a level below the main lobby level. The walls are painted metal or plaster/ wallboard. One wall is covered with black laminate to support exhibit panels. The floor is covered in light gray carpet with a black vinyl base. The ceiling is 2 foot by 2 foot acoustic tiles painted black with round recessed light fixtures and track lighting.

Exhibits are mounted in light gray display cases and are set parallel to the walls but not attached. A black laminate wall in the center of the room currently supports exhibit panels.

The south wall has a door leading to offices.

Ranger Office Hall
A hall leads from Exhibit Room No. 2 to the south offices for rangers (figure 4-65). The walls are plaster painted white, and the floor is light gray carpet. The carpet has a four inch vinyl base. The ceiling is 2 foot by 4 foot lay-in acoustic tile painted white. The ceiling lighting is recessed fluorescent lighting.

Ranger Office No. 1 and No. 2
The two offices (figures 4-66 and 4-67) are very similar and are located to either side of the ranger office hall. Their flooring is light gray carpet with vinyl base. Most of the walls are metal although some are plaster painted white. The ceiling is 12 inch by 12 inch lay-in acoustic tile with surface mounted fluorescent light fixtures.

Ranger Workroom
At the south end of the ranger office hall is the ranger workroom (figure 4-68). This room has a four inch cream tile floor and plaster walls. The ceiling is 2 foot by 4 foot lay-in acoustic tile with recessed fluorescent light fixtures and ceiling air registers. A water stain in one corner indicates that there was a leak at some point. The leak does not appear to be active at this point.

The workroom has many file cabinets and tables that run along two walls.

Interior Existing Conditions

Generally the interior is in very good condition. There are very limited areas where there is some deterioration and traces of roof leaks but these do not appear to be currently leaking.

The disabled access lift does not meet ABAAS requirements for a number of reasons, including the very limited head height at the lobby level. Disabled access to the observation room is only provided by leaving the building and traveling on outside paved ramps. This is difficult during typical weather conditions such as snow/ice, rain, and excessive heat.

Several of the wood ceiling strips in the auditorium hall have come loose and are bowing downward.

The restrooms are in fair condition with numerous holes in the tile. The toilets and urinals frequently fail. When they overflow, the lack of floor drains causes flooding and raw sewage to spill into the hallway and lobby.

The break room, the bookstore work room, and the many buildings closets are all are overflowing with binders, supplies, and equipment testifying to the overcrowding and lack of storage at the Visitor Center.

Several of the ceiling tiles in the break room are stained from the HVAC system and roof leaks and are cracked and sagging. The staining does not appear to be active.

Both of the exhibit rooms are in very good condition.

The central column in the lobby has padding that looks very temporary.

The horizontal registers on the knee wall in the observation room are dented, likely from visitor use.

The projection room has limited efflorescence on the upper portion of the south wall. This does not appear to be active. The acoustic tile ceiling in the ranger work room hall is bowing downward indicating that some of the connections to the structure above have come loose.

The ceiling in the ranger workroom is stained although it does not appear to be a current leak. The lay in splines are patched is several locations.

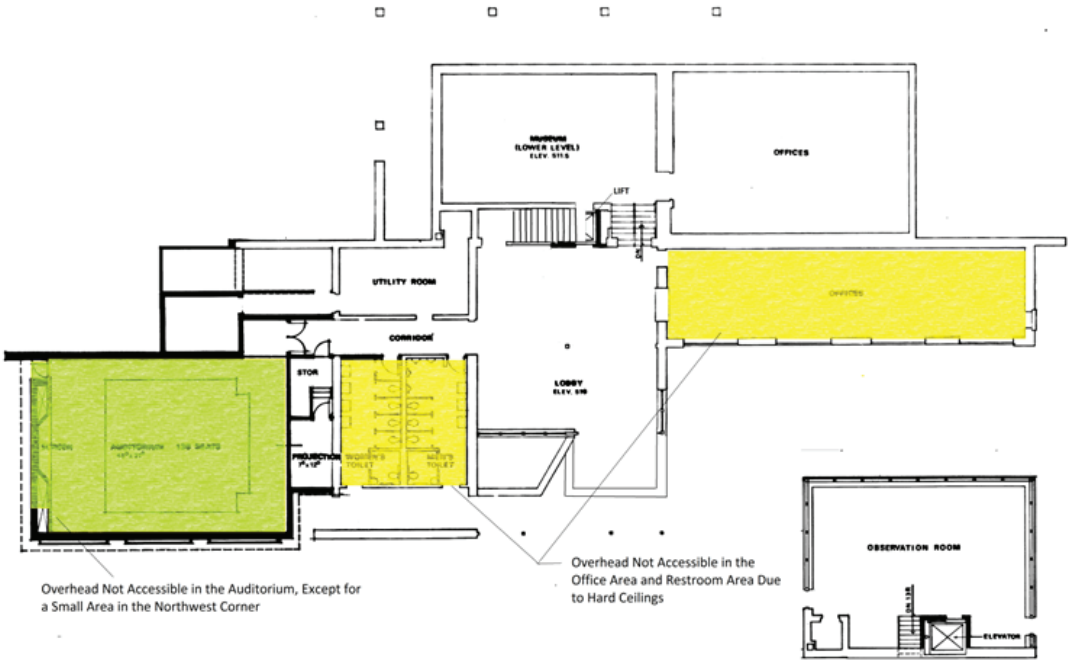


Figure 4-69: Floor plan (source: Alpha Corporation).

Structural Systems

Survey Methods

Site inspections were performed by Timothy Walton, PE, an Alpha Senior Structural Engineer, in conjunction with NPS personnel and other A/E team members, on February 9th, 2017. No destructive tests were conducted. Inspections were limited to accessible areas, including areas above suspended ceiling tiles and the building roof.

The floor plan in figure 4-69 shows the areas that were not accessible and could not be inspected. A hard ceiling was installed above the drop ceiling in the office which did not allow for inspection of the roof framing there. A hard ceiling was installed in the restroom area which did not allow for inspection of the roof framing in that area either. Also, it was not possible to see much of the roof structure in the auditorium area, except for a small area in the northwest corner.

Structural Systems

Few legible design drawings are available showing the original facility construction. Information described herein is based on available drawings, photographs, and inspections.

Exterior Walls

Construction: Exterior walls are composed of both masonry and wood siding sections. In publically visible areas, masonry walls are natural fieldstone (primarily local limestone and dolomite). Concrete masonry units (CMU) are used underground and in other non-publically visible areas. Based on construction documents

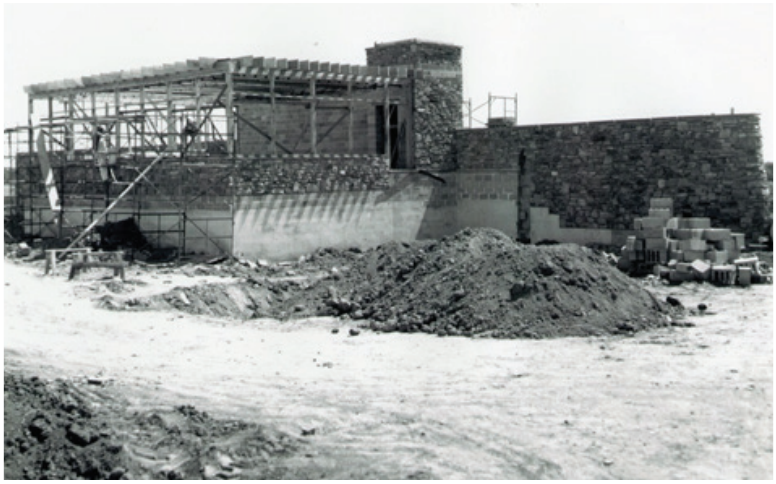


Figure 4-70: Construction of Visitor Center circa 1962. Photograph shows exterior walls with concrete masonry block below and local fieldstone (primarily limestone and dolomite) in areas that will be exposed. All but uppermost courses of concrete blocks have been parged to improve water-resistance. (Source: Antietam National Battlefield Archives)



Figure 4-71: Construction of the office area of the Visitor Center. Wood construction between window openings used 2x6 wall construction, with 3x6 and 6x6 posts reinforcing the openings.(source: Antietam National Battlefield Archives)

and photographs, the outside surface of the concrete masonry unit walls are parged. These areas are underground and not currently visible. There is no indication that reinforcement was used in the construction of the masonry walls, except for the construction of the auditorium, which occurred in 1979-80. Both concrete masonry unit and fieldstone portions of the rear (east) wall of the structure are nominally 18-inches thick in the office area and utility areas, and 16-inches elsewhere. Masonry portions of the auditorium walls use both CMU and fieldstone full-height. An eight-inch CMU wythe is used on the interior side of the auditorium walls, and eight-inch wythe of fieldstone is on the outside face, with a two-inch insulation-filled gap between the wythes.



Figure 4-72: Fieldstone masonry wall on the east side of the office area. Masonry is generally in very good condition. The flagstone caps were removed and reset with new flashing during 2002 when the roof was replaced (source: Alpha Corporation).



Figure 4-73: Signs of moisture on utility area wall, February 2017 (source: Alpha Corporation).

Wood portions of the walls used 2x6 construction. Both 3x6 and 6x6 vertical members are used to reinforce areas where windows are located. Painted wooden siding panels are used on the exterior.

Existing Conditions: Exterior masonry walls (both concrete masonry unit and stone) are generally in very good condition. There are a few signs of light efflorescence on the inside surfaces of both exterior and interior CMU walls, indicative of roofing leaks. However, there were no signs of moisture inside the building during the inspection and no degradation to the masonry was observed. It is likely that the roofing replacement in 2002 corrected many or all of the leaks.

There are signs of moisture on masonry walls in the projection room adjacent to the auditorium. No surface moisture was observed even though there was melting snow on the roof of the Visitor Center during the inspection.

The moisture is indicative of a problem with the roof or flashing around the wall at the roof level. No structural degradation of the wall associated with the moisture was observed.

Wooden exterior wall are generally in good condition, however there are a few areas where moisture-related damage was observed. These are shown in figure 4-74.

Interior Walls

Construction: Various wall types are used for internal walls in the Visitor Center, including concrete masonry unit, fieldstone



Figure 4-74: Area outside of main entrance shows some moisture-related damage adjacent to a window (above) and at toe-molding (below). Issue is not significant structurally, provided extent of damage is limited to the cladding (siding and molding). February 2017 (source: Alpha Corporation).

masonry, and gypsum board drywall. Fieldstone was used for the shear walls in the lobby area. Fieldstone walls are either 16-inches or 18-inches thick. Concrete masonry unit walls were used in areas less-visible to the public, including the utility areas, restrooms, and the original interior fallout shelter walls, which are underground. Interior CMU walls are typically eight-inches thick, and non-load bearing. However, the interior north-south wall that separates the exhibit room from the lobby area is load-bearing and constructed of eight-inch CMU. This wall is visible in figures 4-82



Figure 4-75: Large penetrations in masonry block wall have been made without installing lintels. Based on size of the cables and conduits penetrating through these penetrations, smaller penetrations should have been made. It is unlikely that the penetrations pose a serious structural problem due to the relatively low weight supported by the wall. (source: NPS)



Figure 4-76: An additional penetration in a masonry block wall is shown at left. This occurs in a load bearing wall. It has obviously been this way for some time without a failure; however, due to the location and size of the opening it should be repaired. February 2017 (source: Alpha Corporation).



Figure 4-77: Additional penetrations in masonry block walls are shown at left. The oversized penetrations do not pose a significant structural weakness. February 2017 (source: Alpha Corporation).



Figure 4-78: There are signs of moisture inside the building on interior non-load bearing masonry walls. The location is in the overhead within the storage room/janitor closet adjacent to the auditorium and projection room. It is not clear whether the signs of moisture are recent and whether the moisture issue was corrected in 2002 by the new roof. February 2017 (source: Alpha Corporation).



Figure 4-79: Signs of moisture on interior wall in projection room. No moisture was observed, and no structural degradation of the wall has occurred due to the moisture. February 2017 (source: Alpha Corporation).



Figure 4-80: Fine crack in the masonry wall below the doorway lintel in the projection room. The fine crack is not considered significant; however, the crack should be monitored. February 2017 (source: Alpha Corporation).

and 4-83. Gypsum board walls are typically used for non-structural office partitions, including those now in the fallout shelter.

Existing Conditions: The condition of the interior walls is generally good; however, in several locations oversized penetrations were made to CMU walls without installing lintels or otherwise repairing the walls. These penetrations are in non-load bearing walls, but the walls must still be self-supporting. The observed conditions do not jeopardize the integrity of the walls, but they should be repaired (See figures 4-75 to 4-77).

There are also several locations where evidence of past moisture was seen on interior walls (efflorescence). No moisture was observed during the inspection, but it may be possible that leakage remains active in some locations, especially during periods of heavy rain. No degradation of the walls was observed associated with the moisture (figures 4-78 and 4-79).
In addition, one small crack was observed below a lintel in an interior wall near the projection room. The crack is very fine and not structurally-significant, and is shown in figure 4-80.

Floors
Construction: Reinforced concrete floors are used throughout the facility. Most floors are slab-on-grade construction, and are generally four inches thick, except that the floor in the auditorium is five inches thick. The lobby floor concrete has been paved over with flagstone. The floor deck of the observation room is a suspended slab supported by 14-inch steel trusses spaced at 22 inches on center. The steel trusses supporting the observation



Figure 4-81: Corrugated steel deck panels that support the observation room floor above the exhibit room showing signs of corrosion. The cause for the corrosion is not clear; however, based on its appearance; it is light surface corrosion only, with no significant loss of material. February 2017 (source: Alpha Corporation).



Figure 4-82: View looking to the east in the overhead of the exhibit room. The steel joists support corrugated steel upon which the concrete floor of the observation room is cast. The corrosion of the corrugated steel is light surface corrosion and no significant loss of metal has occurred. February 2017 (source: Alpha Corporation).



Figure 4-83: View looking to the east in the overhead of the exhibit room. The CMU wall visible in the photograph is one of the few eight-inch thick load-bearing walls in the facility. The steel wide-flange section is one of several steel sections that support the concrete decking supporting the platform at the entrance to the observation room (above). Except for the minor corrosion visible on the corrugated steel panels, there are no signs of degradation present in this area. February 2017 (source: Alpha Corporation).

room floor deck are shown in figures 4-81 to 4-83. The landing adjacent to the observation room is a concrete slab supported by eight-inch structural steel channels and wide-flange sections.

Existing Conditions: The condition of the floors is generally good. Since the majority of the floors are slab-on-grade construction, this indicates that the base material was adequately compacted before the floor slabs were placed. Some of the corrugated steel decking panels for the observation room floor show signs of surface rust. Given the uniformity of the corroded panels and the fact that adjacent panels have little or no corrosion, it is likely that the corrosion occurred during construction and does not indicate a moisture problem. This is not considered significant.

Roofs

Construction: All roofing, including the rigid foam insulation, was replaced in 2003-2004. The structural roofing of the lobby area, restrooms, and office area is composed of 2x12 joists at 16-inch on-center spacing and spanning in the east-west direction. Because of the span in lobby and restroom areas, a 20-inch built-up girder spans north/south across this area. The girder is shown in figure 4-101. Rigid insulation and roofing are installed above the 2x12 joists.



Figure 4-84: Overhead Area in the storage room/janitor closet. Steel joists and corrugated steel deck are painted black and in good condition. Above the steel deck is rigid insulation and the roofing system. This photograph shows no structural concerns, and the construction is typical of that in accessible areas of the 1979-80 addition outside the auditorium. February 2017 (source: Alpha Corporation).



Figure 4-85: The overhead in the observation room consists of steel joists and rigid insulation, with roofing above, and the suspended ceiling below. There were no signs of damage in this area. February 2017 (source: Alpha Corporation).



Figure 4-86: Deteriorated portion of the roofing transition between the office area and the lobby. Cause for damage is uncertain. Note that water is ponding in several areas on the roof despite the relatively recent roof replacement (2003-2004). It is noted that specified slope for this portion of the roof was 1/16" per foot, whereas 1/8" per foot was used elsewhere and is more typical for roof construction. February 2017 (source: Alpha Corporation).

As shown in figure 4-84, the roof of the observation room is supported by steel joists. These joists extend over the staircase to the lobby shearwall.

The structural roofing of the auditorium area consists of Type 16H6 steel joists at four-foot spacing. Above the joists is 20-gauge 1½" corrugated steel decking, with three inches of rigid insulation. The rigid insulation panels are covered by the roofing system.

The roof of the fallout shelter is supported by 14"x18" reinforced concrete beams, which are supported by two 14" square concrete columns. A six-inch slab is cast integrally with the beams. A three-inch thick protective slab was then cast over the beam-slab grid. A waterproofing membrane was placed over the protective slab before the shelter was covered with soil. A flagstone terrace was placed over the soil after completion of the fallout shelter in 1962. Because of leakage, in 2015 additional soil was added above the fallout shelter to increase the grade and improve drainage, and the flagstones were replaced in kind with Pennsylvania Cleft flagstone.

Existing Conditions: Since the entire roof was replaced in 2003-2004, most of the roofing appears to be in good condition. Typical roof construction is shown in figures 4-84 and 4-85. However, a few signs of deterioration were observed during the



Figure 4-87: The photograph shows a dark repair patch in the ceiling of the fallout shelter. Signs of moisture are still visible in portions of the ceiling and the integral concrete beam. It is noted that additional soil was placed above the fallout shelter in 2015 to improve drainage, requiring the replacement of the terrace flagstones. Due to the efflorescence, additional crack repairs should be completed in this area. February 2017 (source: Alpha Corporation).



Figure 4-88: The fallout shelter, constructed in 1962, is below grade, and covered by a flagstone terrace. (source: Alpha Corporation).



Figure 4-89: Moisture damage in suspended ceiling office area. Figure 4-87 shows the concrete structure above the ceiling tiles seen in this photo. This area appears to have had significant water leaks over the years and a sump pump was installed to correct the problem. (source: NPS)



Figure 4-90: Coffee cans placed in overhead above lobby to collect rainwater. The cans have evidently been in the overhead for a long time, and NPS staff members have not mentioned the need to empty them. Likely the leakage that these cans were intended to collect was corrected by the new roof in 2003-2004. February 2017 (source: Alpha Corporation).

inspection. As shown in figure 4-86, the transition piece between the lobby and office portions of the roof is damaged. There are also several indications where leakage has occurred in the past. Since no moisture was observed during the inspection, and melting snow was present on the roof, it is likely that the roof



Figure 4-91: Photo shows portions of the sunscreen. The outer beam show signs of age and water damage. However, damage is minor and beam is only required to support the weight of the sunscreen. February 2017 (source: Alpha Corporation).



Figure 4-92: The sunscreen at the entrance to the facility sags. Note that the outboard member sags relative to the straight red line, drawn for reference. It is not clear whether the sag is related to age or is the result of imprecise workmanship during renovations to the facility entrance. However, this requires repair to prevent future sagging and possible failure. February 2017 (source: Alpha Corporation).

leaks observed during the inspection pre-dated the 2003-2004 roof replacement, and most or all of the leaks are now corrected. Figure 4-87 shows a portion of the concrete roof slab above the fallout shelter that has been patched. Figure 4-89 shows a stain in the suspended ceiling in the office area indicative of a roof leak just below figure 4-87. Repairs were completed; however, due to the existing efflorescence, additional concrete crack repairs may be necessary.

Figure 4-90 shows coffee cans hung in the overhead above the lobby that were evidently placed there to capture rainwater from a roof leak.

Outdoor Structures

Construction: The Visitor Center has windowed areas in the lobby and observation room, which have been outfitted with sunscreens, which serve to reduce glare and solar incidence on the windows and also serve an architectural role. The sunscreens are formed from sawn lumber, and are supported by



Figure 4-93: Portion of damaged exterior sunscreen. Note that cantilevered member appears twisted. The cause of the distortion is not clear, but it may result from non-uniform swelling of the wooden members due to moisture. February 2017 (source: Alpha Corporation).



Figure 4-94: Photo shows portions of the sunscreen. Several of the members show signs of age and water damage. However, damage is minor and members are only required to support their own self-weight. February 2017 (source: Alpha Corporation).



Figure 4-95: Several of the columns that support the sunscreen show signs of age and moisture-related damage. The wooden portion of some of the columns shows some wood decay, and in some cases, the concrete pedestal supporting the column is degraded. The extent of damage does not currently threaten the integrity of the structure. February 2017 (source: Alpha Corporation).



Figure 4-96: Another example of a degraded sunscreen column. February 2017 (source: Alpha Corporation).

cantilevering from the edge of the building and column supports at the outside.

Existing Condition: Several sections of the sunscreens show signs of damage, likely resulting from moisture. Examples of this are presented in figures 4-91 through 4-94. In addition to damage to the lattice members, some of the columns that support the sunscreen show signs of degradation at the base. Damage is



Figure 4-97: Portions of the screening fence at the south end of the facility show evidence of wood rot. The fence hides air conditioning condensers and the satellite dish from visitors approaching from the front of the Visitor Center. While the issue is not of structural safety, the fence should be repaired before the entire fence requires replacement. February 2017 (source: Alpha Corporation).

evident to both the wooden columns and the concrete bases for the columns. This is shown in figures 4-95 and 4-96.

In addition to moisture-related damage to the sunscreens, a screening fence, used to obscure air conditioning equipment and a satellite dish from the public in front of the Visitor Center, exhibits signs of damage, as shown in figure 4-97.

Lobby Girder Support
Construction: Because of the relatively long east-west span between bearing walls in the lobby and restroom area, a built-up wooden girder was installed to support the ends of 2x12 joists extending to both the east and to the west. In the original structure, this girder extended north-south over the front entrance as shown in figure 4-98.

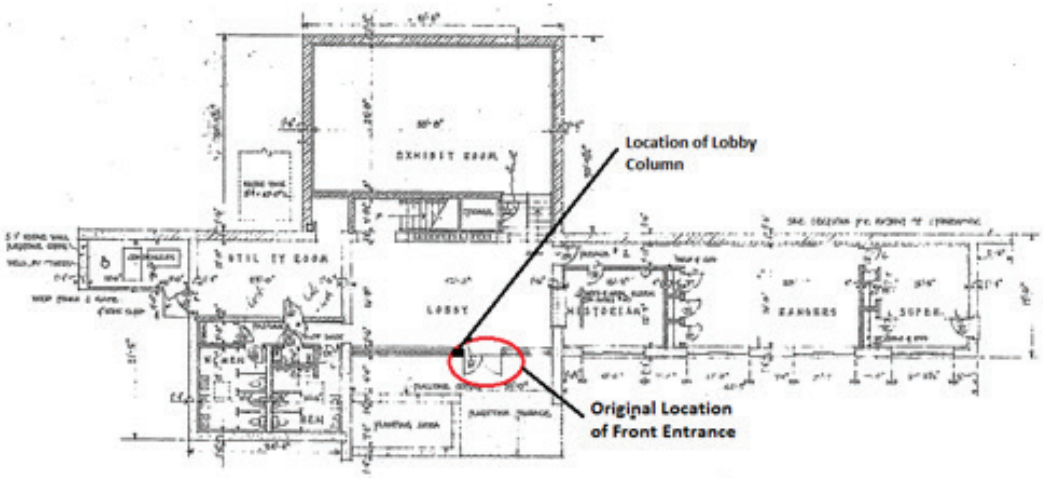


Figure 4-98: As shown, the original location (1961-62) of the front entrance was in line with the front wall of office area. A flagstone patio was placed under the sunscreen in front of the entrance (source: Antietam National Battlefield archives).

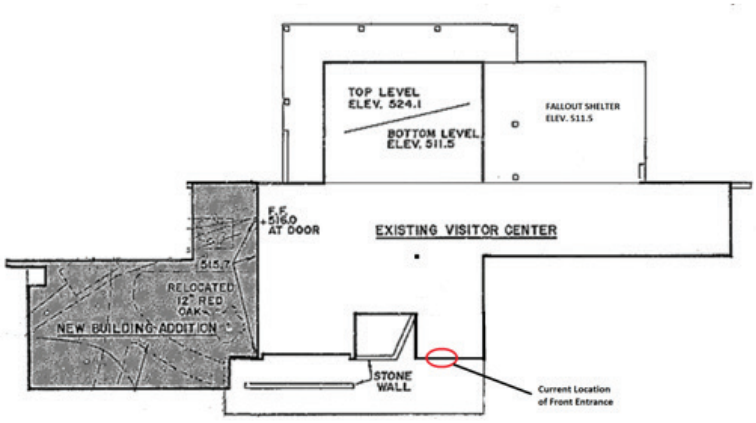


Figure 4-99: In 1973-74, the front door was moved outward, expanding the lobby area. The support column was left in the lobby. (source: Antietam National Battlefield archives).



Figure 4-100: As seen in the photographs, a column remains in the front lobby of the visitor's center. The origin of this column is not clear, but it likely is a remnant from when the front lobby was extended outward. Its location corresponds to the location of the original front wall of the lobby in 1962. This column is unattractive and an obstacle at the facility main entrance (source: NPS).

In 1973-74 the decision was made to move the main entrance to the lobby outward, as shown in figure 4-99. This expanded the lobby area; however, the original wall structure containing the front door served to support the girder. The wall could be removed only if columns were left in place to support the girder. The original two wood columns were later replaced with the current single column, which is steel, encased with wood.

Existing Condition: Although the entrance door was moved, the column had to remain in place, as shown in figure 4-100. While



Figure 4-101: A built-up timber girder spans north/south in the lobby , supporting 2x12 joists in both the east and west directions. In the foreground is the connection of the girder to the column in the lobby. This girder shows no structural issues; however it requires the column support shown in the photo. To remove the column requires additional structural repairs. The actual column is steel, surrounded by wood. February 2017 (source: Alpha Corporation).

structurally acceptable, this column is an obstacle in the lobby. The girder is shown in figure 4-101. Also shown in figure 4-101 is the connection between the column and the built-up girder.

ASSESSMENT:
The facility appears to be in generally good condition for its age. The Visitor Center uses masonry shear walls to resist horizontal loads. These shear walls, in conjunction with piers and columns act to resist vertical loads. Most of the structure floors are slab-on grade, so little floor load is transmitted to walls or columns. The roofing is lightweight. The building is a low-rise structure, and only the observation room/exhibit room section has two stories, but the majority of the exhibit room is below grade. The Visitor Center is located in an area of relatively low seismicity and is not in a hurricane-prone area. Snow loads are low to moderate. Because of these factors, most loads on the building are relatively low – especially lateral loads. The observation room, which has an elevated slab supported by steel joists, shows no signs of damage.

The Visitor Center was designed and constructed to rather high standards compared to typical structures built in the early 1960s. Most of the original structural masonry walls are 16-18 inches thick, with one eight-inch thick CMU structural wall. While it is unlikely that any reinforcement was used in the original

(1961-1962) masonry walls, the thickness of these walls and their relatively short height make them very strong compared to the anticipated loads. A relatively small amount of steel reinforcement was used in the CMU/fieldstone walls for the auditorium (1979). Use of reinforcement in masonry construction did not become common until about 1990. Non load-bearing walls are typically eight-inch CMU, and non-structural office partitions are typically gypsum board construction.

The roof of the fallout shelter was designed to sustain several feet of soil above it. In addition to the 6-inch structural roof slab covering the fallout shelter, another three inches of concrete was added to this slab for additional protection. Possibly this additional layer was related to the similarity between the Cold War “fallout shelters” and “bomb shelters”. The soil above the fallout shelter was regraded and the flagstones replaced in 2015, so that the overall load on the roof has not changed drastically. There was no visual indication of any structural issues with the existing structure beyond the roof leaks identified in the report.

There has been little age-related damage to the Visitor Center since construction. Some signs of water leakage have been observed, but this water has not damaged the structure significantly. It is likely that the roofing replacement in 2003-2004 corrected this leakage, since no moisture was observed during building inspections.

Some degradation of the outdoor sunscreen structure has been observed, even though the structure has been maintained by painting and replacing decayed members. Most of this damage appears to be related to moisture and decay. The amount of moisture-related damage observed is typical of outdoor wooden structures. The type(s) of wood used in the construction and repair of the sunscreen is not known. The sunscreen carries only self-weight, and it is not in danger of failing, except for the one location with sagging noted in the report. Continuing maintenance of the exterior framing should be expected.

In conclusion, the loads on the Visitor Center are very low and the structure is likely over-designed relative to these loads. The standards of construction were very high during original and other major construction activities. There has been no significant structural degradation of the overall structure due to age-related mechanisms. The degree of corrosion to metallic structures is insignificant, and no significant moisture-related damage has been observed. Some minor moisture-related damage has occurred to outdoor wooden components, but these members are not primary structures and can be readily replaced or otherwise maintained.

REFERENCE DOCUMENTS:

1. Drawing No. 302-41025, US Department of the Interior, Nation Park Service, Division of Design and Construction, Eastern Office, William Cramp Scheetz, Jr., Visitor Center, Antietam National Battlefield Site, Sheets 2 through 12, September 1961
2. Drawing No. 302-3030, US Department of the Interior, Nation Park Service, Division of Design and Construction, Eastern Office, Cramp Scheetz, Jr., Visitor Center (Fallout Shelter), Antietam National Battlefield Site, April 27, 1962
3. Drawing No. 302-41007A, US Department of the Interior, Nation Park Service, Denver Service Center, Expansion of Restroom Facilities, Antietam National Battlefield Site, Sheets 1 through 4 June, 1977
4. Drawing No. 302-41034A, US Department of the Interior, Nation Park Service, Denver Service Center, Bushey Associates, Alterations & Addition to Visitor Center, Package 202, Antietam National Battlefield Site, Sheets 1 through 18, August, 1979
5. Drawing No. 302-41034B, US Department of the Interior, Nation Park Service, Denver Service Center, Bushey Associates, Alterations & Addition to Visitor Center, Package 202, Antietam National Battlefield Site, Sheets 1 through 18, December 1980
6. Drawing No. 302-41034, US Department of the Interior, Nation Park Service, Denver Service Center, Alterations & Addition to Visitor Center, Antietam National Battlefield Site, Sheet 1, April 1979
7. Drawing No. 302-13003, Handicap Access, Antietam National Battlefield, Sharpsburg, Maryland, Sheets 1 through 4 plus Sheet 2A, October 1980
8. Drawing No. 302-80066, US Department of the Interior, Nation Park Service, National Capital Region Antietam National Battlefield, Replace Roofing at Antietam Visitor Center, Sheets 1 through 9, January 2002

Mechanical

Building Systems

1. Two oil-fired furnaces with split system direct expansion cooling are located in the lower level mechanical room. See figure 4-102.
   a) A 2000 gallon underground oil tank provides fuel to the furnaces. The fuel tank and lines were provided and/or relocated during the 1979-80 addition when the auditorium was built. It is unknown what parts of the fuel oil system have since been replaced or received major repairs.
   b) The furnace system that serves the lobby and bookstore is controlled by a wall mounted thermostat located in the lobby with ceiling supply and return grilles. The age of the existing Williamson furnace is unknown but appears to be the original.
   c) The low boy Williamson furnace appears to be a 2012 replacement of the original furnace and serves the lower level museum and observation room. The controlling thermostat is wall mounted located in the observation room. The supply ductwork serving both rooms is routed above the museum the ceiling. Ceiling mounted outlets serve the museum. Supply runout ductwork is routed through the floor delivered around the perimeter of the observation room through supply grilles seen in figure 4-103. The observation room return duct is routed up from the mechanical room in a closet in the northwest corner of the room to a wall mounted return grille.

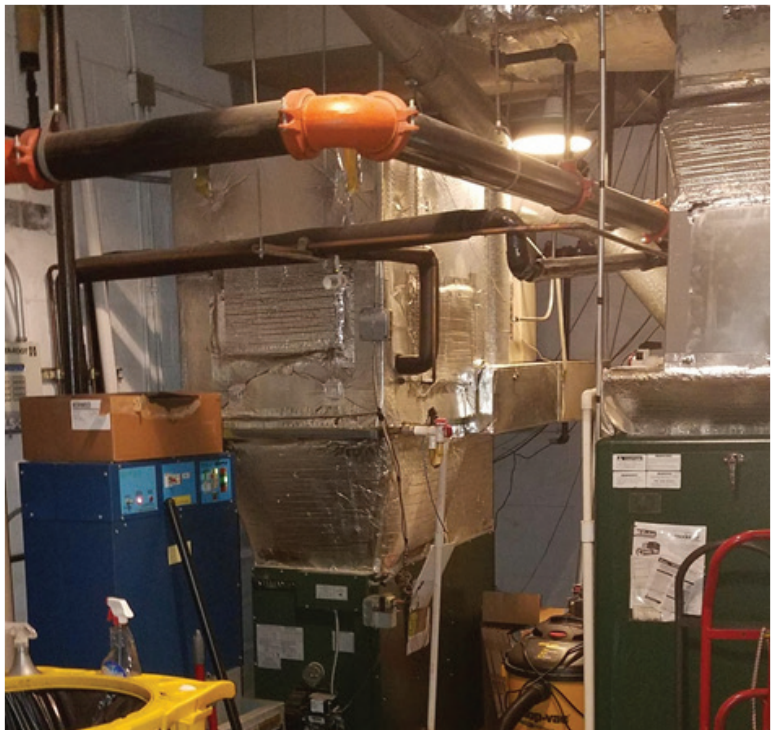


Figure 4-102: Oil-fired furnace, February 2017 (source: Summer Consultants).



Figure 4-103: Supply grille, February 2017 (source: Summer Consultants).

   d) The split system condensing units for the two furnaces are located outside on the north side of the building. The 6 ton Carrier R410A condensing unit dates to 2011 and is connected to the low boy furnace that serves the lobby and bookstore while the older 5 ton Bryant R22 condensing unit dates to the year 2000.
   e) Outside air ventilation for both systems is obtained through roof mounted gravity intake hoods. See figure 4-104.
2. The auditorium and break room are served by a 7.5 ton split system heat pump with a horizontal air handler located above ceiling in the break room. The serial number of the Bryant outdoor unit indicates that it was last replaced in 2009.
   a) Supply and return duct are routed above the lower level ceiling to serve the spaces. Air is delivered above the wood slat ceiling of the auditorium making proper air distribution within the auditorium challenging. Ceiling fans are used to assist with circulating air, and drive heat from the ceiling area down in winter months.
   b) The split system air handling unit also has a 20 kW duct mounted electric heating coil to provide space heating in addition to the electric heat pump.
3. The lower level offices are served by a 4 ton R410A Trane split system air conditioning unit located in a closet with duct mounted electric heating coils. The outdoor air ventilation is provided by a louver located on the south end of the building behind the stone retaining wall. The condensing unit located adjacent to the outside air louver was last replaced in 2015. See figure 4-105.



Figure 4-104: Roof-mounted gravity intake hoods, February 2017 (source: Summer Consultants).

4. Supplemental cooling has been provided in the bookstore and bookstore office with the addition of 2 ductless mini-split wall-mounted cooling only air conditioners manufactured by Sanyo. Vertical blinds have also been provided on the large west wall glass. The two condensing units are located on the south end of the building providing approximately 3 tons and 1-1/2 tons of cooling capacity respectively. See figure 4-106. The condensate drain from the ductless air conditioners have routed to the sump located to the closet housing the split air handling serving the lower level offices.



Figure 4-105: Condensing unit, February 2017 (source: Summer Consultants).



Figure 4-106: Supplemental condensing units, February 2017 (source: Summer Consultants).

Plumbing

1. The existing 2” domestic water service and wet pipe sprinkler service enters the north end of the lower level of the building. The domestic water service is routed from the utility pit located with the water meter outside of the observation room. An abandoned domestic water pit is also located outside of the observation room which can be seen in figure 4-107.



Figure 4-107: Abandoned domestic water pit, February 2017 (source: Summer Consultants).

2. Domestic hot water is produced by an AO Smith electric water heater dated 1997 located in the lower level mechanical room having a 50 gallon storage and 4.5 kW heating capacity.
3. The sanitary system consists of a 6000 gallon septic tank that was provided during the original 1962 construction with a leaching field located off the east of the building in the grassy field. The last major project impacting the sanitary system was the 1977 restroom renovation and expansion project.
4. Some of the fixtures in the existing restrooms have been renovated with autosense, low flow fixtures to include lavatories, urinals and ADA water closets. Manual flush valves are provided for all other water closets.

Electrical

1. The Antietam Visitor Center is provided with a 400A 120/208V three phase service. The 400A service fused disconnect is located in the utility room located on the first floor across from the restrooms. See figure 4-108 for the incoming service equipment.
    a) The main service has two taps off it, one serving the 400A 120/208V three phase main lug only Main Distribution Panel (MDP) and the other serving 200A 120/208V three phase fused safety switch which in then turns serves a 200A main lug only 200A 3 phase Panel A.
    b) The MDP serves all the mechanical loads in the building, the fire alarm and two other branch circuit panels.
    c) Panel A serves most of the light and receptacle loads.
    d) Panel 2, a 100A 120/208V 3 phase load center is located in the mechanical room in the lower level which serves the equipment in this room.
    e) Panel 3, a 100A 120/208V 3 phase panel is located in the bookstore. This panel serves the loads in this area.
2. Most of the lighting in lobby, museum area and the auditorium consist of recessed down lights and some track lighting. The office area, restrooms break room and the bookstore mainly consist of parabolic and lensed fixtures. See figures 4-109 to 4-112 for lighting in various areas.
    a) The lamps of the recessed down lights and the parabolic fixtures were replaced recently under an energy savings contract.
    b) The auditorium is provided with a Lutron Grafik Eye dimming system which is located in the utility room behind the auditorium.
    c) The lighting on the exterior of the building consists of LED Wall Paks. See figure 4-113 for the exterior fixture.
    d) The restrooms are also provided with sky lights.
    e) The exit lights are LED.
    f) Occupancy sensors are provided in the auditorium, offices, bookstore, the restrooms, and break room.



Figure 4-108: Incoming phone and electrical service equipment, February 2017 (source: Summer Consultants).



Figure 4-109: Bookstore lighting, February 2017 (source: Summer Consultants).



Figure 4-110: Exhibit lighting, February 2017 (source: Summer Consultants).

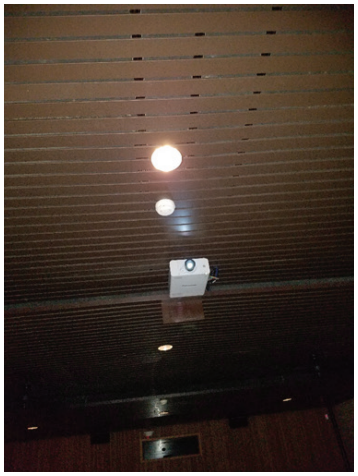


Figure 4-111: Auditorium lighting, February 2017 (source: Summer Consultants).



Figure 4-112: Lobby lighting, February 2017 (source: Summer Consultants).

g) An Exide Battery inverter is located in the break room which provides battery backup to the egress lighting fixtures. See figure 4-114 for the battery inverter.

3. Code deficiencies: It was noticed that several of the LED light fixtures recently install did not use junction boxes to tap conductors as required by the National Electric Code. See figure 4-115 for the deficiency.

4. The fire alarm system is a Cerberus System 3 Hard Wired system. Strobes, smoke detectors and horn strobes are located throughout the Visitor Center. See Photo Y-8



Figure 4-113: Exterior wall pak, February 2017 (source: Summer Consultants).

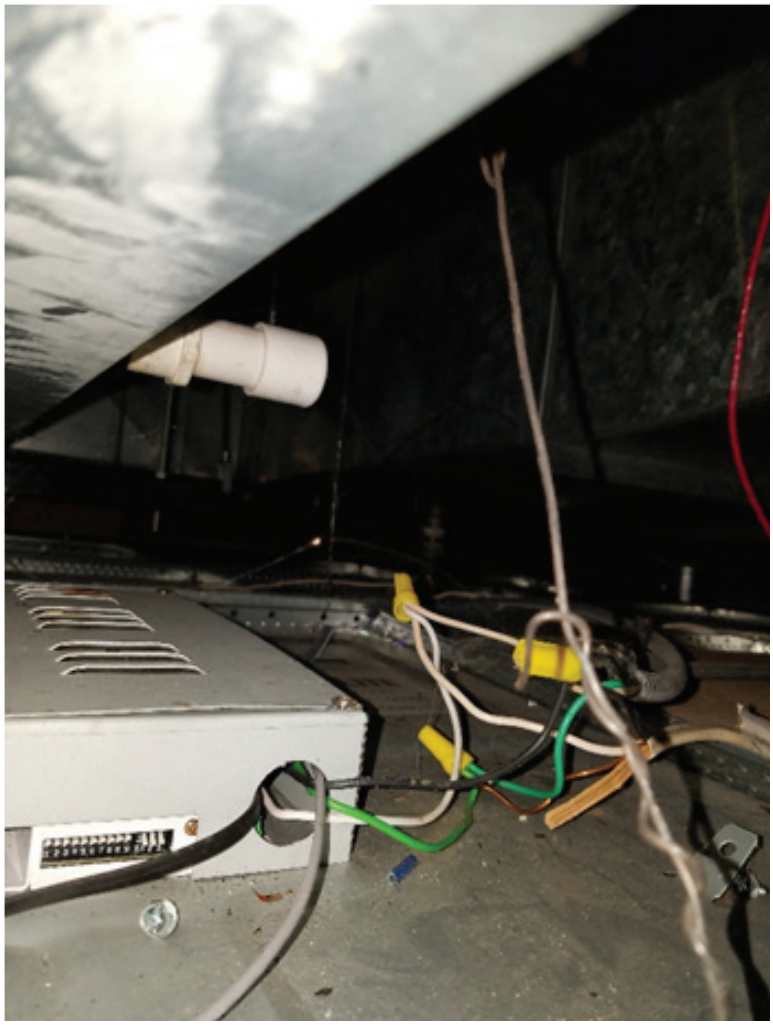


Figure 4-115: Splices not in junction box, February 2017 (source: Summer Consultants).



Figure 4-114: Lighting inverter, February 2017 (source: Summer Consultants).



Figure 4-116: Fire alarm system, February 2017 (source: Summer Consultants).

Hazardous Materials Testing

Executive Summary

Arc Environmental, Inc. performed a pre-alteration survey of accessible interior spaces of the Antietam Visitor Center, located at Antietam National Battlefield, in Sharpsburg, Maryland (site). The site was occupied at the time of the survey. The survey was performed to evaluate the Site for the presence of suspect asbestos-containing materials (ACMs), lead-based paint (LBP), and universal wastes. The survey was performed on February 9, 2017.

A total of 74 bulk samples were collected from 23 identified homogenous areas suspected of containing asbestos. Seven of the suspect materials, black mastic associated with 12” x 12” black floor tile, 9” x 9” tan with white floor tile and associated mastic, floor tile and associated mastic under linoleum flooring, and 9” x 9” grey floor tile and associated mastic, sampled were confirmed to be ACMs. One material, the stage curtain, was assumed to contain asbestos due to the destructive nature of sampling curtains. No roof sampling was performed as part of this survey; other limitations to the survey include lack of access to interstitial cavities behind fixed surfaces and sealed plenum spaces. Section 2.0 of this report discusses in detail the asbestos survey and findings.

The lead-based paint survey was conducted using a portable X-ray Fluorescence (XRF) device. On-site testing was performed as a screening to determine if LBP was present at the Site. The testing revealed that lead-based paint was present on interior components including: metal pipes, metal pipe handles, and tile walls. Section 3.0 provides details regarding the LBP survey.

A visual survey and inventory of potential universal and regulated wastes was performed as part of the survey. Noted potentially regulated wastes include mercury vapor-containing tubes, ballasts, fire extinguishers, and battery-operated exit signs. Section 4.0 provides details regarding the universal and regulated waste survey.

1.0 Introduction

Arc Environmental, Inc. performed a pre-alteration survey of accessible interior spaces of the Antietam Visitor Center, located at Antietam National Battlefield, in Sharpsburg, Maryland (Site). The Site was occupied at the time of the survey. The survey was performed to evaluate the Site for the presence of suspect asbestos-containing materials (ACMs), lead-based paint (LBP), and universal wastes. The findings of the survey are presented in this report.

The survey was conducted by Arc Environmental on February 9, 2017.

2.0 Asbestos-Containing Materials Survey

2.1 Methodology

The asbestos survey was performed by EPA-trained and Maryland Department of Environment (MDE) asbestos inspector Mr. Josh Floyd. A copy of the inspector's training certificate is included in Appendix C. The survey was conducted under protocols established by the Environmental Protection Agency (EPA) 40 Code of Federal Regulations (CFR) 763 Asbestos Hazard Emergency Response Act (AHERA) and 40 CFR 61 Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP).

Arc Environmental employed the following protocols while performing the limited survey: flooring materials were penetrated to the subfloor to determine how many layers of flooring were present, and ceiling systems were evaluated to identify suspect building materials associated with systems themselves. The survey was limited to accessible areas throughout the facility and did not include roof sampling.

During the survey, Arc Environmental collected a total of 74 bulk samples from suspect materials which may be impacted as part of the planned renovation project. The bulk samples of suspect ACMs were submitted, along with the corresponding chain-of-custody forms, to EMSL Analytical, Inc. (EMSL) to determine the presence of asbestos in the sampled materials. EMSL is accredited for asbestos analysis in bulk materials through the National Voluntary Laboratory Accreditation Program (NVLAP). A copy of the laboratory's NVLAP accreditation is included in Appendix A of this report.

The bulk samples were analyzed using polarized light microscopy (PLM/Dispersion Staining following the EPA method 600/ R-93/116, July 1993, Method for the Determination of Asbestos in Bulk Building Materials). Based on the United States Environmental Protection Agency's (USEPA's) definition, a material which contains greater than one percent (1%) asbestos, as determined using the methods specified in Appendix E, Subpart E, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), is considered an ACM and must be handled according to OSHA, USEPA, and MDE regulations if disturbed.

2.2 Findings and Recommendations

Laboratory analysis of the 74 bulk samples collected from the identified suspect materials confirmed that seven of the materials were asbestos-containing. One material, the stage curtain, was assumed to contain asbestos due to the destructive nature of sampling curtains.

The findings of verified ACMs are summarized in Table 1, *Identified Asbestos-containing Materials*. A copy of the chain of

custody form and Laboratory Analytical Results are included in Appendix A.

Table 1: Identified Asbestos-containing Materials

Description	Location	Quantity	NESHAP Category
Floor Tile Mastic Associated with FT1	Beneath Floor Tile in Projector Room and Janitor Storage	205 SF	Category I Non-friable
9" x 9" Tan with White Floor Tile and Associated Mastic	Observation Deck Under Carpet	1,150 SF	Category I Non-friable
Floor Tile Under LN1	Beneath Linoleum in Offices	200 SF	Category I Non-friable
Black Floor Tile Mastic Associated with FT3	Beneath Floor Tile in Offices	200 SF	Category I Non-friable
9" x 9" Grey Floor Tile and Associated Mastic	Beneath Carpet in Gift Shop Office	200 SF	Category I Non-friable
Stage Curtain*	Auditorium	1 EA	Category II Non-friable

**Presumed*

As detailed above, asbestos-containing floor tiles and flooring mastic are present within the planned renovation area. These materials are classified as Category I non-friable materials (i.e., resilient floor coverings, mastics, asphalt roof products, gaskets, and packings) by the USEPA. The USEPA regulates Category I non-friable materials when they have been rendered friable. Category I non-friable materials may become friable if subjected to sanding, grinding, cutting, or abrading. These materials must be removed by a licensed asbestos abatement contractor prior to any alteration or disturbance of the materials.

The stage curtain is classified as a Category II non-friable material by the USEPA. Category II non-friable materials are regulated if they have a high probability of becoming or have become crumbled, pulverized, or reduced to powder by the forces expected to impact the materials during the course of demolition activities. This material must be removed by a licensed asbestos abatement contractor prior to demolition.

ACMs which will be impacted by renovation or demolition activities must be removed prior to disturbance. Disturbance and/or proper removal of ACM from the Site must be performed by personnel trained in accordance with EPA, OSHA, and MDE regulations for asbestos-related activities; abatement of ACMs must be conducted by a MDE-licensed asbestos removal contractor. A licensed asbestos consultant should be retained to conduct oversight and air-monitoring during abatement activities.

A qualified asbestos consultant must be retained to conduct oversight and air monitoring during any abatement activities. In addition, due to the limited nature of this survey, if other suspect materials are encountered during renovations or demolition that may be impacted, these materials should be sampled and

analyzed by PLM to verify asbestos content, or be assumed as ACM, prior to disturbance. A complete list of the suspect materials sampled during this survey is presented in Appendix B.

3.0 Lead-based Paint Survey

3.1 Methodology
Painted surfaces within the project area were visually inspected to determine their condition. A lead-based paint survey was conducted using an X-ray Fluorescence (XRF) Spectrum Analyzer on painted building surfaces and/or components. Surfaces that are intact or deteriorated condition (as defined by the U.S. Department of Housing and Urban Development (HUD) Guidelines) do not pose an immediate health risk, regardless of the lead content. Leaded paint in poor condition is a priority lead-hazard and should be promptly addressed using approved Lead Safe Work Practices. The painted surfaces within the project area were in good condition at the time of the survey.

Mr. Derek Kwon, an USEPA-trained Lead Inspector Technician, performed the lead screening at the Site. A copy of Mr. Kwon's accreditation is included in Appendix C. The screening included 81 XRF readings, including six calibration checks to ensure that the instrument is within acceptable calibration parameters. Lead-based paint, when tested via XRF, is defined by the HUD and MDE as paint having lead concentrations greater than 0.7 milligrams per square centimeter (mg/cm^2). The results of the lead-based paint survey are summarized in the XRF Lead-based Paint Inspection Data Sheets included in Appendix D.

The lead screening did not include testing of every painted surface within the project area; rather its intention is to characterize groups of similar components and coatings. If similar components with the same substrate and paint to those identified below are encountered during renovation activities, they are to be treated as lead-based paint affected.

3.2 Findings and Recommendations
Of the 81 field screening shots, five of the XRF readings obtained from surfaces and coatings within the project area were found to contain lead in levels equal to or greater than the 0.7 mg/cm2 guideline for lead-based paint for Maryland.

The testing revealed that lead-based paint was present on interior components including: metal pipes, metal pipe handles, and tile walls.

The Occupational Safety and Health Administration (OSHA) Lead in Construction Regulation, 29 CFR 1926.62, applies to all construction work where an employee may be occupationally exposed to lead. This standard does not indicate a specific percentage or mass per area (mg/cm2) of lead-in-paint that is

permissible during construction/demolition activities. There is no acceptable concentration for lead under the OSHA lead standard that eliminates the requirement for contractors to comply with this regulation. Due to the presence of lead-containing paint at the site, OSHA worker protection requirements for lead must be followed during renovation and/or demolition activities. Additionally, if lead abatement is performed for historical preservation or other requirements at the site, an appropriately licensed lead abatement contractor should be retained to complete these abatement actions.

A lead Toxicity Characteristic Leaching Procedure (TCLP) test should be conducted for the demolition debris generated onsite. A representative waste stream sample should be collected to characterize the demolition debris, in accordance with the Resource Conservation and Recovery Act (RCRA), to determine disposal options. The hazardous waste criteria for lead waste is established under RCRA, Subtitle C, as 5.0 milligrams per liter (mg/L) measured with the TCLP as listed in CFR 40 Part 261. The lead-containing and lead-based paint debris generated during demolition should be handled in accordance with all applicable Federal and state regulations.

4.0 Universal & Regulated Wastes

Arc Environmental conducted a visual inspection for Universal Wastes (UWs) and other potentially regulated and hazardous wastes within the project area. As per 40 Code of Federal Regulations (CFR) 261 Subpart C, UWs include any of the following six wastes that have at least one hazardous characteristic: batteries, pesticides, thermostats, cathode ray tubes, mercury-containing devices, and mercury-containing lamps (e.g., fluorescent tubes and high intensity discharge lamps). These wastes require proper handling and disposal methods when no longer in use or prior to completing any planned demolition activities. All identified Universal and potentially regulated wastes must be handled, transported, and disposed of in accordance with applicable regulations prior to the renovation of the site.

4.1 Mercury

Arc Environmental observed three (3) fluorescent tubes and seven (7) emergency lighting systems within the interiors of the Site. The light tubes are assumed to contain mercury vapor. Batteries associated with the emergency lighting systems can contain heavy metals which include mercury. Mercury-containing light tubes and batteries associated with emergency lights will require proper removal and disposal in accordance with USEPA regulations listed in 40 CFR Part 273.

4.2 Polychlorinated Biphenyls

A visual inspection was conducted for potential PCB-containing equipment and fixtures. Light fixtures were visually assessed to determine the presence of PCB-containing ballasts. While no PCB labels were observed, all light ballasts are likely to contain other regulated fluids that will require proper removal and disposal. Arc Environmental recommends removal, segregation by type, and proper disposal of all identified ballasts. There are approximately two (2) suspect ballasts associated with light fixtures in the project area that could not be accessed.

No suspect pliable caulks or waterproofing mastics were observed within the project area; therefore, no bulk samples were collected for PCBs.

4.3 Other Potentially Regulated and Hazardous Wastes

Other potentially regulated and hazardous wastes that are not considered UWs were identified at the Site. Although not considered UWs, these identified wastes will need to be removed and disposed of prior to any demolition activities due the potential for release incidents impacting the environment. The following other potentially regulated and hazardous wastes were identified at the site:

- Exit signs;
- Coolant in the water fountain; and
- Fire extinguishers.

As discussed above, these other wastes will require proper handling, removal, and disposal methods prior to any planned alterations or demolition within the project area.

Chapter 5: Treatment Analysis

Ultimate Treatment and Use

The Secretary of the Interior has established standards and guidelines for the appropriate treatment of historic properties. These standards identify three approaches that might be considered for treatment and use of the Antietam Visitor Center: preservation, restoration, and rehabilitation (the fourth approach, reconstruction, is not an applicable treatment approach for this site).

Preservation
Preservation is defined as "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project." Under Preservation, the Antietam Visitor Center would be maintained in more or less its present state, with the minimal maintenance necessary to continue it in its present condition. It would continue to display the additions and alterations that have occurred. Simply repairing and preserving the building in its current state would not meet the mandates of the enabling legislation or the needs of the park, and therefore Preservation is not an appropriate approach.

Restoration
Restoration is defined as "the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties

functional is appropriate within a restoration project." This approach as applied to the Antietam Visitor Center would likely mandate its restoration to the period of significance (its original construction dates). Although Restoration is an appropriate approach given the significance of the Visitor Center, it would not address ongoing issues with accommodating visitors, and in fact would remove necessary square footage and functions. Restoration is therefore not a viable approach.

Rehabilitation

Rehabilitation is defined as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values." A rehabilitation approach to treatment would provide the most flexibility in the use of the Antietam Visitor Center. This approach emphasizes the retention and repair of historic materials, but more latitude is provided for replacement because it is assumed the property is more deteriorated prior to work. Like those for Preservation, the standards for Rehabilitation focus attention on the preservation of those materials, features, finishes, spaces, and spatial relationships that, together, give a property its historic character. Therefore, Rehabilitation is the recommended approach to treatment for the Antietam Visitor Center.

Proposed Use

The Antietam Visitor Center was constructed as a facility for visitor orientation and education as well as providing amenities for visitor comfort. Given the building's location and historic use, it is most appropriate to continue its use as the Park's Visitor Center. No other alternative uses have been identified, nor are there plans for construction of a new facility. The 1992 General Management Plan/Environmental Impact Statement planned for short-term rehabilitation of the Visitor Center, but called for it to be relocated and the present building demolished when it reached the end of its useful life, as it was considered an intrusion in an otherwise historic area. The park is currently developing a Visitor Access and Circulation Plan/Environmental Assessment, which would amend several decisions from the 1992 General Management Plan, including those related to the Visitor Center. This HSR is being prepared to guide the future rehabilitation of the Visitor Center with the assumption that the building will not be removed.

For the purpose of this report, the Antietam Visitor Center is being treated as a historic structure. While it has not yet been determined eligible for the National Register, the evaluation in Chapter 3 recommends that the building be treated as eligible until its status can be formally determined, a process that is currently underway as part of a nomination for Mission 66-era resources at

the Park. This HSR is written with the assumption that the building is eligible and makes recommendations accordingly.

Preservation Zones

To aid in future planning and work, the spaces of the Visitor Center have been classified into preservation zones. Zones are defined as follows:

Primary: Primary zones are defined as those that were designed as important public spaces, were original to the design and construction of the Visitor Center and retain integrity to the period of significance (1962-1963). Great care should be taken to preserve the character-defining features of these spaces when undertaking any future work. Necessary alterations should be concealed or complementary to the original design but remain distinct from the character of the original fabric. Examples of primary zones include the original lobby, exhibit room no. 1, the observation room, and the observation room terrace.

Secondary: Secondary zones are defined as those that were designed as important public spaces but have subsequently lost some degree of integrity through alterations; or that were added after the period of significance but designed to complement the character of the original design. Greater latitude is permitted in making necessary alterations in these areas, but work should remain complementary to the original design. Examples of secondary zones include the expanded lobby, the auditorium, the bookstore, and exhibit room no. 2.

Tertiary: Tertiary zones are defined as those that were designed as utilitarian or non-public spaces, or have been significantly altered in a manner not complementary to the character of the original design. Significant alterations are permissible in these spaces, but care should be taken to ensure that alterations preserve any remaining historic fabric and do not impact the character of the primary and secondary zones. Examples of tertiary spaces include the restrooms, mechanical spaces and break room, and offices and storage areas.

Diagrams illustrating the preservation zones are provided at the end of this chapter.

Requirements for Treatment and Use

A number of laws, regulations, and functional requirements delineate treatment and use of the historic structures in National Parks. In addition to protecting the cultural resource, these requirements also address issues of human safety, fire protection, energy conservation, abatement of hazardous materials, and handicapped accessibility. Some of these

requirements may contradict or be at cross purposes with one another if they are rigidly interpreted. Any treatment must be carefully considered in order that the historic fabric of the structure is preserved.

Authorizing Legislation

The Antietam National Battlefield Site was established by Congress in 1890. Public Law 86-438 of 1960 authorized the Secretary of the Interior to acquire lands and interests in land as necessary to preserve, protect, and improve the Antietam Battlefield.

Foundation Document

The Foundation Document was prepared for the Antietam National Battlefield in September 2013 and it identifies the fundamental resources and values associated with the park as well as the park significance and interpretive themes. Preparation of the Foundation Document included an assessment of planning and data needs, other important resources and identification of key park-wide and major issues. All of these were prioritized and connected with stewardship priorities.

Purpose Statement
The Purpose Statement for the park reinforces the foundation for future park management and use decisions. The following is the Purpose Statement for the park:

“The purpose of Antietam National Battlefield is to preserve, protect, restore, and interpret for the benefit of the public the resources associated with the Battle of Antietam and its legacy.”

Park Significance
Significance statements express why Antietam National Battlefield resources and values are important enough to merit national park unit designation. Statements of significance describe why an area is important within a global, national, regional, and system wide context. These statements are linked to the purpose of the park unit and are supported by data, research, and consensus. Significance statements describe the distinctive nature of the park and inform management decisions, focusing efforts on preserving and protecting the most important resources and values of the park unit.

“The following significance statements have been identified for Antietam National Battlefield. (Please note that the statements are in no particular order):

- Antietam National Battlefield is the site where more than 23,000 soldiers were killed, wounded, or missing—the bloodiest single-day battle in American history.

- The result of the Battle of Antietam provided President Abraham Lincoln with the opportunity to issue the preliminary Emancipation Proclamation, which elevated the purpose of the war to include abolishing slavery.

- The high level of landscape integrity at Antietam evokes a powerful sense of place that allows visitors to make personal connections to the battle and to its participants.

- The photographs taken at Antietam within days after the battle were the first to publicly display the carnage and horrors of the American Civil War.

- The Confederate retreat from Maryland following the Battle of Antietam ended the Army of Northern Virginia's first invasion of the North and had a significant impact on the momentum, morale, and politics of the American Civil War.

- Antietam National Cemetery, dedicated in 1867 as the final resting place for Union soldiers who fell at Antietam, continues to serve as a memorial to honor

- Military sacrifice.

- The commemorative landscape at Antietam National Battlefield illustrates America's evolving values and views on the Civil War."

The above is from the "Foundation Document – Antietam National Battlefield"' prepared by the National Park Service, ANTI 302/121730, September 2013.

National Historic Preservation Act

The National Historic Preservation Act of 1966, as amended (NHPA), mandates federal protection of significant cultural resources, including buildings, landscapes, and archeological sites listed in or eligible for listing in the National Register of Historic Places.

Section 106
A routine step in the Park's planning process for the treatment of cultural resources is compliance with Section 106 of the NHPA. This requires that prior to any undertaking involving National Register or National Register-eligible historic properties, federal agencies "take into account the effect" of the undertaking on the property and give the Advisory Council on Historic Preservation (Advisory Council) "a reasonable opportunity to comment with regard to such under-taking."To satisfy the requirements of Section 106, regulations have been published (36 CFR Part 800, "Protection of Historic Properties") that require, among

other things, consultation with local governments, State Historic Preservation Officers, and Indian tribal representatives. They also establish criteria under which the Advisory Council may comment, but as a practical matter, the vast majority of Federal undertakings do not involve review by the Advisory Council. The point of Section 106 review is to ensure that all interested parties have a voice in the treatment of the nation's cultural heritage.

The Secretary of the Interior's Standards

The Secretary of the Interior's Standards for the Treatment of Historic Properties (Standards) provide a philosophy to underpin historic preservation that is widely understood and almost universally accepted in the United States. By separate regulation, the Secretary has required the application of the Standards in certain programs that the Secretary administers through the National Park Service. They have also been widely adopted by state and local governments and by the private sector, and are intended to be applied to a wide variety of resource types, including buildings, sites, structures, objects, and districts. The Standards, revised in 1992, are codified as 36 CFR Part 68 in the 12 July 1995 Federal Register (Vol. 60, No. 133). The revision replaced the 1978 and 1983 versions of 36 CFR 68 entitled "The Secretary of the Interior's Standards for the Treatment of Historic Properties". The Standards are neither technical nor prescriptive, but are intended to promote responsible preservation practices that help protect the nation's irreplaceable cultural resources. For example, they cannot, in and of themselves, be used to make essential decisions about which features of the historic building should be saved and which can be changed. But once a treatment is selected, the Standards provide philosophical consistency to the work.

The Standards describe four broad approaches to the treatment and use of historic properties. These are, in hierarchical order:

- Preservation, which places a high premium on the retention of all historic fabric through conservation, maintenance and repair. It reflects a building's continuum over time, through successive occupancies, and the respectful changes and alterations that are made.
- Rehabilitation, which emphasizes the retention and repair of historic materials, but provides more latitude for replacement because it is assumed the property is more deteriorated prior to work. (Both Preservation and Rehabilitation standards focus attention on the preservation of those materials, features, finishes, spaces, and spatial relationships that, together, give a property its historic character.)
- Restoration, which focuses on the retention of materials from the most significant time in a property's history,

while permitting the removal of materials from other periods.
- Reconstruction, which establishes limited opportunities to re-create a non-surviving site, landscape, building, structure, or object in all new materials.

Regardless of treatment approach, the Standards put a high priority on preservation of existing historic materials and not just the architectural form and style. The Standards also require that any alterations, additions, or other modifications be reversible, i.e., be designed and constructed in such a way that they can be removed or reversed in the future without the loss of existing historic materials, features, or character.

As noted above, Rehabilitation has been identified as the most appropriate overall approach to the treatment of the Visitor Center. Within the overall approach, treatments adhering to other standards may be deemed appropriate; for example, restoration of the original fenestration pattern at the west wall of the administration wing may be considered an appropriate treatment for that specific element even under the overall approach of rehabilitation.

Americans with Disabilities Act of 1990

The Americans With Disabilities Act of 1990 (ADA) establishes comprehensive civil rights protection for disabled Americans, both in employment and in their right to free, unaided access to public buildings. While people with restricted mobility have most frequently benefited from ADA, protection also extends to those with other disabilities, including those with impaired vision or hearing. Requirements for full compliance with ADA regulations are extensive and easiest to apply to new construction. Full compliance for historic buildings is more difficult and sometimes would require significant alterations to the historic character of the property. Where that is the case, ADA authorizes a process for arriving at alternatives to full compliance that can preserve historic character while maximizing a disabled visitor's access to the historic building.

Architectural Barriers Act (ABA)

Standards issued under the Architectural Barriers Accessibility Act (ABAA) apply to facilities designed, built, altered, or leased with certain federal funds. Passed in 1968, the ABAA is one of the first laws to address access to the built environment. The law applies to federal buildings, including post offices, social security offices, federal courthouses and prisons, and national parks. Coverage is limited to those funding programs that give the federal agency awarding grants or loans the authority to establish facility standards.

The Visitor Center does provide a level of universal accessibility but the facilities do not always meet specific requirements. Deficiencies exist, including out-of-compliance parking and ramps on the exterior of the building and a lift that does not reach the observation room of the Visitor Center, requiring wheelchair users to go around the exterior of the building to reach it.The Park has done an excellent job of identifying the range of problems, prioritizing them and determining funding requirements.

International Building Code

Building codes are generally applicable to all buildings whether they are historic or not. As a matter of policy, the NPS and the State of Maryland are guided by the International Building Code (IBC), which includes this statement regarding codes and historic buildings:

3406.1 Historic Buildings. The provisions of this code related to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to *not constitute a distinct life safety hazard* [emphasis added].

Threats to public health and safety should always be eliminated, but because the Visitor Center at Antietam has not yet been determined to be historic, alternatives to full code compliance is unlikely to be granted. Therefore all work proposed as part of a renovation should comply with all building code requirements.

NFPA Code 914

The National Fire Protection Association (NFPA) has promulgated codes for historic buildings, most notably NFPA 909, “Code for the Protection of Cultural Resources Properties - Museums, Libraries, and Places of Worship,” and NFPA 914, “Code for Fire Protection of Historic Structures.”

National Park Service Management Policies

The NPS General Management Policies (2006) guide overall management of historic properties, especially Chapter 5 “Cultural Resource Management.”Based upon the authority of some nineteen Acts of Congress and many more Executive orders and regulations, these policies require planning to ensure that management processes for making decisions and setting priorities integrate information about cultural resources, and provide for consultation and collaboration with outside entities. These policies also support good stewardship to ensure that cultural resources are preserved and protected, receive

appropriate treatments (including maintenance), and are made available for public understanding and enjoyment.

Chapter 5 of the NPS Policies Manual describes Cultural Resources Management.
"The Service's cultural resource management program involves research to identify, evaluate, document, register, and establish basic information about cultural resources and traditionally associated peoples; planning to ensure that management processes for making decisions and setting priorities integrate information about cultural resources and provide for consultation and collaboration with outside entities; and stewardship to ensure that cultural resources are preserved and protected, receive appropriate treatments (including maintenance) to achieve desired conditions, and are made available for public understanding and enjoyment." (Official U.S. Government edition 0-16-076874-8 ISBN for U.S. Government Printing Office)

Section 9.3.1 3 "Visitor Centers" covers how to present visitor information and interpretive services. The current Visitor Center has a strong program for both visitor information and interpretation.

The appearance and condition of resources before treatment, and changes made during treatment, will be documented. Such documentation will be shared with any appropriate state or tribal historic preservation office or certified local government, and added to the park museum cataloging system. Pending treatment decisions reached through the planning process, all resources will be protected and preserved in their existing states. The management policies lay out rules for use of historic properties under the control of the National Park Service. Chapter 5 of this document directs that "compatible uses for structures will be found whenever possible [to] help prevent the accelerated deterioration of historic structures due to neglect and vandalism," but goes on to warn against uses of structures that would "threaten the…character of a structure…or that would entail alterations that would significantly compromise its integrity."

Director's Order-28

Also circumscribing treatment and use of historic properties in National Parks is Director's Or-der 28, Cultural Resource Management Guideline. It requires that the NPS plan for the protection of cultural resources such as the Antietam Visitor Center and reinforces the requirement to use existing buildings for NPS purposes. In Chapter 8, "Management of Historic and Prehistoric Structures," observes that "[t]he primary preservation issue…is the compatibility of the use with the structure." DO-28 also requires that no historic structure be rehabilitated or restored without an appropriate historic structure report.

Building Code Summary

The recommendations in this document are in accordance with the International Code Council (ICC) Model Codes and Standards, 2015 editions and the NFPA National Fire Codes, including but not limited to the following:

BUILDING: 2015 ICC International Building Code (IBC); 2015 ICC International Existing Building Code; ANSI/ASSEZ117.1, Safety Requirements for Confined Spaces; 2015 NFPA Life Safety Code (NFPA 101) – the most restrictive requirement will dictate
MECHANICAL: 2015 ICC International Mechanical Code (IMC)
PLUMBING: 2015 ICC International Plumbing Code (IPC)
FIRE: 2015 ICC International Fire Code (IFC); NFPA National Fire Codes, Including Annexes (except NFPA 5000)
ENERGY: 2015 ICC International Energy Conservation Code (IECC)
FUEL GAS: 2015 ICC International Fuel Gas Code (IFUGC)

Other Guidelines, Codes, Regulations and Local Utility Requirements:
- National Fire Protection Association (NFPA) 70, 2017 National Electrical Code

Federal Government Legislation, Regulations, Standards and Guidelines:
- 2004 Architectural Barriers Act and ABAAS Guidelines
- Americans with Disabilities Act (ADA) 2010 Design Guidelines
- ANSI A117.1 2003
- Uniform Federal Accessibility Standards (UFAS)
- Occupational Safety and Health Administration (OSHA)

The authority having jurisdiction (AHJ) for the National Capitol Region is James King, Branch Chief Fire and Emergency Management.

Codes Introduction

The following summary is an initial analysis to inform alternatives that might be explored during the design of any proposed renovation work. This analysis is not comprehensive and needs to continue to be updated and expanded throughout the design process. Additional information regarding code requirements and fire life safety for National Parks Service projects can be found at https://www.nps.gov/dscw/ds-safety-fire.htm#bcis. The final code analysis should include all elements listed on this site.

Occupancy Type

(Chapter 3 IBC: Use and Occupancy classification): Antietam Visitor Center has multiple use groups:

- A-3 - Assembly (Museum and Assembly Areas of greater than 50 people) and B – Business (staff support spaces), and M-Mercantile (Shop).

Construction Type

The building is a Type V wood frame building.

Fire-Resistance Ratings

Building Element	**Type V**
Primary structural frame	0
Bearing walls - Exterior	0
Bearing walls - Interior	0
Nonbearing walls and partitions - Exterior	0
Nonbearing walls and partitions – Interior	0
Floor construction and associated secondary members	0
Roof construction and associated secondary members	0

Occupancy Load Factor

(Chapter 7, 2015 NFPA 101):

- Assembly Use, less concentrated use without fixed seating = 15(sf/person)net (Table 7.3.1.2)
  The lobby, the two exhibit rooms, and the observation room
  Lobby - 56 occupants, exhibit room 1.- 89 occupants, and exhibit room 2. - 72 occupants,
  Observation room – 53 occupants
- Assembly use, concentrated use with fixed seating = 7(sf/person)net (Table 7.3.1.2)
  Auditorium – 199 occupants
- Business use = 100 (sf/person) net; Concentrated business use = 50 (sf/person)net (Table 7.3.1.2)
  Break room and information - 6 occupants,
  The two ranger offices, the ranger workstation, and the bookstore office
  Offices - 12 occupants
- Mercantile use (bookstore sales) = 30(sf/person)net; Storage, receiving, shipping = 300 (sf/person) net (Table 7.3.1.2)
  Bookstore - 26 occupants

- Exits shall be sufficient for simultaneous occupancy of both the assembly occupancy and the other parts of the building, except where the AHJ determines that the conditions are such that simultaneous occupancy will not occur (12.1.3.3 2015 NFPA 101).

Egress

Egress element requirements are based on the prescriptive provisions of the 2015 NFPA Life Safety Code. A performance based option is available and can be explored as a project moves forward.

Means of Egress

- The number of means of egress from any balcony, mezzanine, story, or portion thereof shall be not less than two, except under one of the following conditions (7.4.1.1)
- The number of means of egress from any story or portion thereof, other than for existing buildings as permitted in Chapters 11 through 43, shall be as follows (7.4.1.2):
- Occupant load more than 500 but not more than 1000 – not less than 3.
- Occupant load more than 1000 – not less than 4.
- It is not the intent to require four means of egress from each level of an assembly occupancy building having a total occupant load of more than 1000 where, individually, the floors have occupant loads of less than 1000 (A.12.2.4).

Arrangement of Means of Egress

- Where two exits, exit accesses or exit discharges are required, they shall be located at a distance from one another not less than one-half the length of the maximum overall diagonal dimension of the building or area to be served, measured in a straight line between the nearest edge of the exits, exit accesses, or exit discharges, (7.5.1.3.2).
- Areas accessible to people with severe mobility impairment, other than existing buildings, shall have not less than two accessible means of egress, unless otherwise provided in 7.5.4.1.2 through 7.5.4.1.4 (7.5.4.1).
- Common path limit for unsprinklered building (Table A7.6):
  Assembly 20 ft (>50 people)/75 ft (< 50 people)
  Mercantile (Class A, B, C) 75 ft
  Business 75 ft
- Dead End Corridor limit for unsprinklered building (Table A7.6):
  Assembly 20 ft
  Mercantile (Class A, B, C) 20 ft
  Business 20 ft
- Travel Distance Limit for unsprinklered building (Table A7.6):
  Assembly 200 ft
  Mercantile (Class A, B, C) 150ft

Business 200 ft.

- In assembly occupancies, other than those listed in 12.2.3.6.2(1), the main entrance/exit shall be of a width that accommodates one-half of the total occupant load (12.2.3.6.2(2)).
- Where the main entrance/exit from an assembly occupancy is through a lobby or foyer the aggregate capacity of all exits from the lobby or foyer shall be permitted to provide the required capacity of the main entrance/exit, regardless of whether all such exits serve as entrances to the building (12.2.3.6.5).
- In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building provided that the total exit width furnishes not less than 100% of the width needed to accommodate the permitted occupant load. (12.2.3.6.6).

Egress Components
Per Table 7.3.3.1, the capacity factor for stairways is 0.3 inches/person. The capacity factor for level components and ramps is 0.2 inches/person.

Limited Access or Underground Buildings
The lowest level of the building is less than 30 ft below the level of exit discharge, therefore the lower level is not considered a limited access or underground building per 2015 NFPA 101 (12.4.3.1).

The main level occupancies and the observation room all have the required number of exits and they are arranged to meet current requirements. The lower level only has one exit that comes up to the lobby and then out of the building. Given the current occupant load in the lower level there should be two exits from this area. See the section below for more details.

Accessibility

Existing Disabled Access Issues

The Visitor Center has numerous areas where the facility does not meet ADA and ABAAS standards, several of which are major problems and should be corrected as soon as possible.
From the visitor parking lot, one must travel on a long narrow sidewalk that does not meet ADA and ABAAS standards, up to the main entry of the building. One leaf of the vestibule exterior doors is automated. The main entry doors from the vestibule into the lobby are not automated. On the interior, the main floor level is generally accessible with the lobby, auditorium and the bookstore having direct access to all visitors. The restrooms have disabled access toilet stalls and sinks but do not meet current standards.

To access the observation room, mobility-impaired visitors must leave the Visitor Center going outside through the main entry and along two narrow walkways around the side of the building and up a hill to the observation room. These walkways do not meet ADA or ABAAS standards. The door at this ramp does not meet accessibility standards as it does not have a power assist button and requires manual opening.

Mobility-impaired visitors who wish to view the lower-level exhibit rooms or the ranger offices on the lower level must use a non-code compliant, severely deficient chair lift of limited width and height. Many wheelchairs will not fit into the narrow lift and someone using crutches would be unable to use the lift because of its limited vertical height.

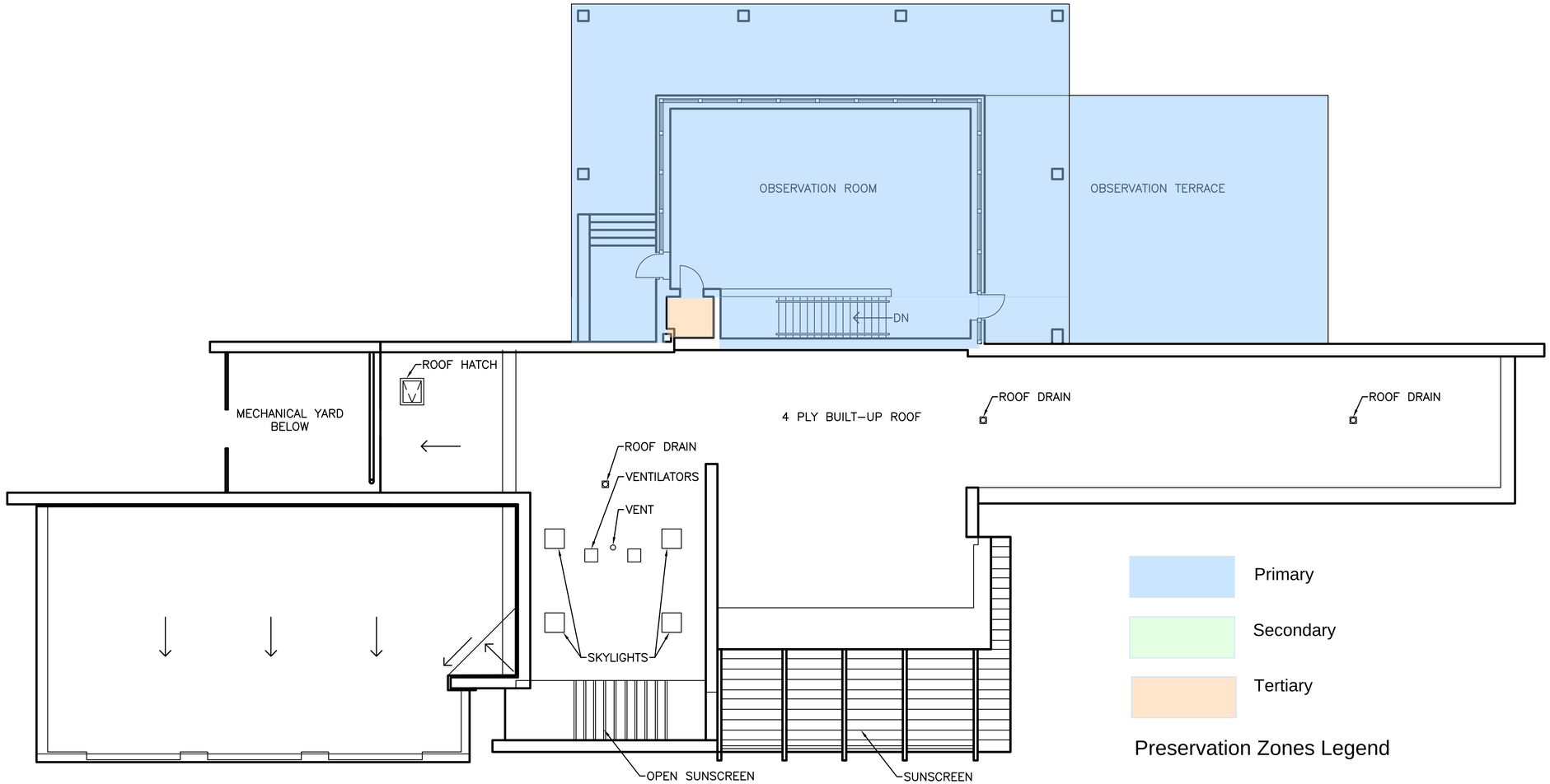
See Chapter 6: Treatment Recommendations for proposed alterations to meet accessibility standards.



1 / A5 FIRST FLOOR PLAN – CURRENT
SCALE Ⓐ

SCALE Ⓐ 8 0 8 16
SCALE OF FEET

DESIGNED: MV CADD MV TECH. REVIEW: TR DATE: 08/31/2017	SUB SHEET NO. A5	TITLE OF SHEET FIRST FLOOR PLAN HISTORIC STRUCTURE REPORT FOR THE ANTIETAM NATIONAL BATTLEFIELD VISITOR CENTER	DRAWING NO. 646 124865 PMIS/PKG NO. GATE201069C SHEET 5 OF 9



SCALE Ⓐ 8 0 8 16
SCALE OF FEET

1/A6 SECOND FLOOR PLAN – CURRENT
SCALE Ⓐ

DESIGNED: MV CADD MV TECH. REVIEW: TR DATE: 08/31/2017	SUB SHEET NO. A6	TITLE OF SHEET SECOND FLOOR PLAN HISTORIC STRUCTURE REPORT FOR THE ANTIETAM NATIONAL BATTLEFIELD VISITOR CENTER	DRAWING NO. 646 124865 PMIS/PKG NO. GATE201069C SHEET 6 OF 9

Chapter 6: Treatment Recommendations

In general, the Visitor Center is very well maintained. The issues identified are generally related to functionality and accessibility.

Site Recommendations

The walkways from the visitor parking lot to the Visitor Center and up to the observation room should be modified to meet ADA and ABAAS requirements.

Exterior Envelope Recommendations

Sunscreens

The sunscreens located on all four elevations are in fair to poor condition with some elements having extensive rot and deterioration. The entire sunscreen system, including the slats, joists and columns should be studied in detail and rotted elements replaced in kind.

There has been discussion to replace the entire sunscreen system with aluminum members. An in-depth discussion needs to accompany a change such as this. Generally speaking, if elements in an historic setting are damaged extensively enough and were originally painted, it is possible to replace them with new materials that match the dimensions, finish and appearance of what was there before. It is also possible to make the case that the sunscreen slats are renewable elements of the building that because of their nature will need to be replaced on a regular basis. A survey needs to be undertake to determine the level of deterioration and quantity of sunscreen elements that require replacement so that the impact on overall sunscreen system.

Drainage and Downspouts
In several locations, the original internal gutters/downspouts have been capped and replaced with external gutters and

downspouts. This was likely done to address internal leakage. While the external gutters and downspouts detract from clean lines of the original design, even modern internal downspout systems are prone to leaking. Careful consideration and additional study should be given before restoring the original internal system.

Elevations

West Elevation
- Clean the base of the stone wall where the Visitor Center Sign is located.
- Replace entry shed with more appropriate entry that matches the feeling of the building (see discussion, below).
- Reconnect the existing downspout at grade to the drain system at corner of lobby and the bookstore wing.
- Replace the deteriorated caulking at the base of west stone wall and the concrete paving.
- Reset the existing splash blocks to drain away from the building.

North Elevation
- Replace the column base at northern column outside of observation room.
- Reattach stone window sill at northeast corner of the observation room.

East Elevation
- Reattach the loose coping stone at south end of the roof wall.
- Clean the stone work on the north end of the east stub wall.

Interior Recommendations

Proposed Disabled Access Improvements

A new elevator should be a very high priority for any funds that become available. It will enable the Visitor Center to meet all national and local codes for accessibility by providing access to all three levels of the Visitor Center. An excellent location for the elevator is found in an existing machine room on the main level and a closet directly above on the observation room level. An area in the lower level below the machine room on the main level could also be used for the elevator to reach the exhibit room level. Should the elevator not fit into the spaces available, the area to the south of these spaces on each level, could be used for expansion. Please refer to the plans which show the proposed location for the elevator.

The walkways from the visitor parking lot to the Visitor Center and up to the observation room should be modified to meet ADA and ABAAS requirements.

The existing restrooms do not meet current accessibility standards or the needs of the staff and visitors. The restroom doorways are not wide enough and there are no staff or family restrooms.

Additionally, some changes to doors and hardware should be made to ensure compliance with ADA, ABAAS, and universal design requirements. In particular, exterior doors should be modified with power assist buttons.

Expansion and Restroom Relocation

The staff has noted that there are major changes that should occur in the restrooms in addition to the disabled access issues. The original plumbing does not meet code requirements and there are no floor drains in the restrooms. As a result, the restrooms flood on a recurrent basis with sewage when toilet drains become clogged.

In addition, the narrow hall that leads to the auditorium regularly becomes congested during peak times with access to the restrooms blocked spilling out into the lobby.

To address both these issues, and after consultation with NPS staff at Antietam National Battlefield and the National Capital Regional Office, the following solution is proposed. The restrooms would remain in their current location and footprint, with a complete interior renovation. The existing projection room, which is no longer needed, would be remodeled to provide a family restroom. The existing open area behind the west stone wall would be enclosed to create an interior corridor. This would provide both an exterior entrance to the restrooms, and a new entrance into the expanded lobby space (see discussion below). The advantages to this plan are that it still provides access to the restrooms when the main building is locked, and also separates auditorium and restroom circulation at the interior. Since the new corridor would be hidden behind the existing stone wall, it would represent little impact to the character of the exterior, although this approach is only feasible if the lobby is expanded to the west as described below, which has a greater impact. Refer to the treatment recommendation plan at the end of this chapter.

Under this plan, the existing doors to the restroom in the interior (auditorium) corridor could be entirely removed and the wall sealed. If maintenance access is still desired, more utilitarian doors could be installed and kept locked except when maintenance access is needed. Appropriate signage would be required both inside and outside the restrooms to direct visitors to the new circulation pattern.

Second Exit from the Lower Level

Currently, the lower level of the Visitor Center, which includes the two exhibit rooms, the employee offices and the ranger workstation, has only one means of egress. If there were an event, such as a fire, near the existing exit, visitors and employees would be trapped. By installing a second means of egress, this serious hazard would be eliminated. A new exit to the exterior could be located at the southeast corner of exhibit room 2 with a door and stair leading up to the south on the east side of building. A trench would need to be dug here to provide a lower landing and door and a stair up to grade. This could be open to the air above or covered with a retractable panel that opened when needed. This is only one proposal for the location of the stair but it does provide an adequate distance between the two exits and there are other alternatives available.

Removal of the Lobby Column

To remove the column in the lobby, the existing beam above it needs to be replaced with a stronger beam that can span the width of the lobby and carry the roof loads above. A new steel beam about 16 inches deep could replace the wood beam and new steel column supports at each end could be installed to support the new beam. These could be buried in the existing walls. See structural recommendations, below, for further details.

Interior Elements and Finishes

Auditorium Hall
- Secure several ceiling slats that are loose on the west side of the hall.

Break Room
- Replace the stained and damaged ceiling tiles.

Projection Room
- Replace broken ceiling tile.

Rangers Work Room
- Replace damaged and stained ceiling tiles.

Utility Room
- Consider moving the utility room, and connecting plumbing systems to the public sewer rather than the existing septic field.

Structural Recommendations

The Antietam Visitor Center is in good condition with only a few minor issues that need to be addressed. The cracks in the concrete ceiling of the fallout shelter, the sagging sunscreen beam in front of the planter and sunscreen post bases are items that should be addressed as soon as possible. Masonry repairs to the non-load bearing walls are not as critical, but should be addressed in the future. Masonry cracks and possible roof leaks need to be monitored to determine if any corrective action is necessary. All other items are considered to be maintenance items.

Recommendations for each item noted in the structural systems existing conditions section are listed below in the order they appear in that section. Figure numbers reference figures from that section.

General Repairs and Maintenance

Efflorescence was noted on the exterior projection room walls in figures 4-73 and 4-78. This situation was also noted in the janitor room in figure 4-79, which is a non-load bearing wall. In all cases no surface moisture was observed during the inspection, and it is likely this problem was resolved when the roof was replaced in 2003-2004. However, the walls should be monitored to confirm that this issue has indeed been resolved. If surface moisture occurs, then the roof flashing should be repaired to stop the leaks and prevent any ongoing damage to the masonry walls. Presently, the walls show no signs of failure.

Decayed sheathing and molding at the base of the exterior wall were noted in figure 4-74. The decayed wood should be replaced and painted to protect it from future damage. Any wood in contact with concrete should be preservative-treated prior to painting. This is considered to be a maintenance item.

Non-load bearing masonry walls in the utility room have large openings without lintels shown in figures 4-75 and 4-77. We recommend adding masonry lintels or infilling the openings to make them smaller. An additional penetration in a masonry block wall is shown in figure 4-76. This occurs in a load bearing wall. It has obviously been this way for some time without a failure; however, due to the location and size of the opening it should be repaired. Either patch the hole so that the hole is 8” in diameter or less or install a lintel above the opening.

A crack was noted in the janitor room in figure 4-80 that starts at the corner of the door and propagates up to a duct opening. The crack should be monitored to make sure it is not active. If the crack widens or lengthens, then it is considered active and should be repaired. Crack repairs in mortar joints can be repaired by repointing the mortar joint. Crack repairs in masonry block can be repaired by replacing the damaged block or using epoxy to fill the crack. Epoxy can only be used when the block cavity is

grouted solid. If the block is not grouted then the block can easily be replaced and mortar joints repointed.

A crack in the fallout shelter ceiling was shown in figure 4-87. The crack had been repaired with waterproofing and did not appear to be active. However a crack in a structural concrete ceiling significant enough to allow moisture to penetrate through the slab should be properly repaired to protect the reinforcing from damage due to moisture infiltration. The proper repair for this crack is epoxy grouting. For small cracks such as this one, a quick-set epoxy is used to seal the crack at the surface and small ports are installed before the epoxy hardens. The ports allow additional epoxy to be pumped into the crack under pressure to fill the void. When the epoxy cures, it will provide a permanent seal against moisture and protect the structural integrity of the roof. Additional investigation is recommended to make sure the waterproofing on the soil side of the concrete slab is not damaged. This would require excavation at the location where the leak occurred. If the waterproofing is damaged and rebar is exposed to moisture through small cracks in the concrete more significant problems will occur in the future.

There are locations on the sunscreen where paint is peeling and/or wood decay is noticeable. Figures 4-91 and 4-94 depict two locations where this occurs. The wood should be repaired and repainted. Wood used in exterior environments should be pressure-treated or painted on all four sides to protect it from moisture. This is considered a maintenance item.

A wood beam that is part of the sunscreen at the entrance of the Visitor Center is shown in figure 4-92. The beam is sagging between columns. The sunscreen in this area was added as part of the 1977 restroom renovation. The construction drawings show columns at approximately 8’ on center for a total of five columns.

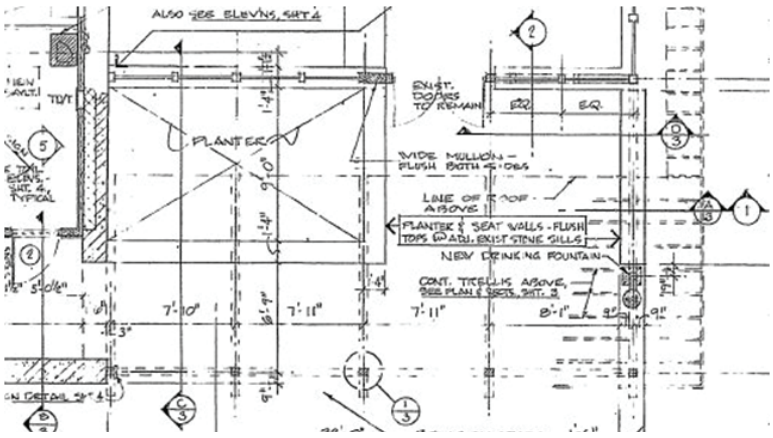


Figure 6-1: Partial view of Drawing 302 Sheet 2 of 4 prepared by Biderman/Hays in 1977.

There are only four columns installed today. At some point, a column was removed. The existing wood beam consists of a double 2x10 structural beam that is sheathed with pine lumber similar to the detail shown below.

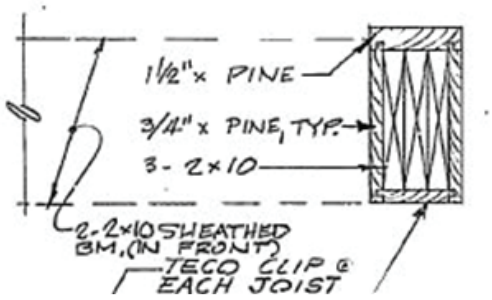


Figure 6-2: Partial view of Drawing 302 Sheet 3 of 4 prepared by Biderman/Hays in 1977.

The construction drawings required the splices for the sheathing to be offset from the splices in the structural header. It would be typical for a splice in the structural beam to occur at a column location. The splice in the sheathing can be seen in figure 24. Unfortunately, the splice in the structural beam cannot be visually determined. Based on the deflection, it is surmised that the ¾" sheathing is the only member that provides continuity at the previous column location. This has provided enough continuity to prevent failure, but is structurally insufficient. There are two options to repair this item, install a new column or a new beam. Since the column was removed, it is assumed the preferred repair is to replace the beam. The existing double 2x10 beam should be removed and a new beam installed between the two existing columns as shown below. The beam should be continuous from column to column. Sheathing can be applied over the new structural beam and painted to match the existing sunscreen.



Figure 6-3: Front view of sunscreen.

A beam supporting the sunscreen has rotated and damage at the wall connection can be seen in figure 4-93. The exact reason for the twisting cannot be visually determined. Possible causes include water infiltration causing the wood to twist due to wetting and drying cycles, a failure at the wall connection, or over stress. It is unlikely that overstress is an issue in this case. The beam should be replaced and the connection at the wall repaired. Additional investigation is necessary to determine the best repair for the connection at the wall.

As shown in figures 4-95 and 4-96, the sunscreen column bases are damaged and need to be replaced. The columns need some bearing capacity and uplift capacity. The damaged column pedestal in figure 4-95 indicates the connection is completely failed. To repair the connection, a new bracket needs to be installed at the concrete level. The existing drawings show a thickened slab in the front of the Visitor Center. At this location, a new bracket could be installed by anchoring it to the existing concrete. Unfortunately, the connection would not be hidden. To hide the connection, the bracket would need to be embedded in new concrete which would require a section of concrete to be removed and replaced. For the connection in figure 4-95, the concrete should be removed and replaced to make sure there is adequate support for the column. The column sheathing should be removed near the base of the column to determine the amount of damage to the base connection and whether it needs to be repaired.

Lobby Column

The lobby column cannot be removed without replacing the existing beam. The existing wood beam is insufficient to support roof loads for the entire length between existing walls if the column is removed. The distance between the bottom of the joists and bottom of the drop ceiling was measured at 18” in the field. A 16” deep steel beam can be installed to support the existing roof joists for the 32 feet between existing walls. The existing wood beam will need to be removed and the new steel beam installed in its place. To prevent changing the elevation of the drop ceiling or adding a bulkhead, hangers or brackets can be installed to attach the existing joists to the beam. At each end of the beam, a new steel column can be installed at each wall. A bump out can be created at the wall, or the column can be hidden within the wall. It would be easier and cheaper to create a bumpout. In either case, additional foundation work is required at each wall. The original joists appear to be #2 Grade southern yellow pine based on visual inspection. Joists that were added at a later date when the building was expanded are stamped #2 Douglas Fir. The existing 2x12 joists at 16” on center meet the current building code.

Proposed Elevator Location

Walls for Proposed Elevator
As shown in figure 6-4, below, the first floor plan shows a solid wall on the west side of the location where the new elevator is proposed. While a solid wall does exist in this location on the second floor, no wall exists on the first floor—the machine room is open to the existing utility room. There is no structural reason why a new non-loadbearing wall could be constructed in this location. It would have to be designed as a retaining wall below the lobby slab-on-grade level.

In addition, the first floor plan shows that an existing wall to the south of the proposed elevator location must be removed to serve as the entrance to the elevator. This should not be a problem, since the wall is non-loadbearing.

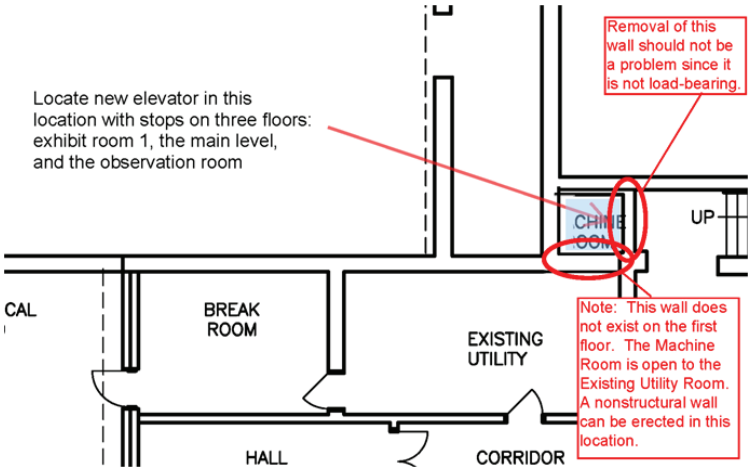


Figure 6-4: Walls at proposed elevator location.

Pilasters in Location for Proposed Elevator
As shown in 6-5, there are two pilasters in the vicinity of location proposed for the new elevator. Although one of the pilasters is shown in the first floor plan, the other is not. Pilasters are structural components and should not be removed unless a thorough structural analysis of the area is performed, and it is determined acceptable to remove one or both pilasters. In this case, destructive testing may be necessary to determine the necessity of the pilaster.

Excavation for Proposed Elevator.
As shown in figure 6-6, the proposed elevator will require a pit or sump below its lowest position. Excavation of the elevator pit will extend below the foundations for the surrounding walls. The dimensions of these foundations are not known, but they will likely extend well into the elevator shaft. The excavation cannot undermine the existing foundations unless measures are taken

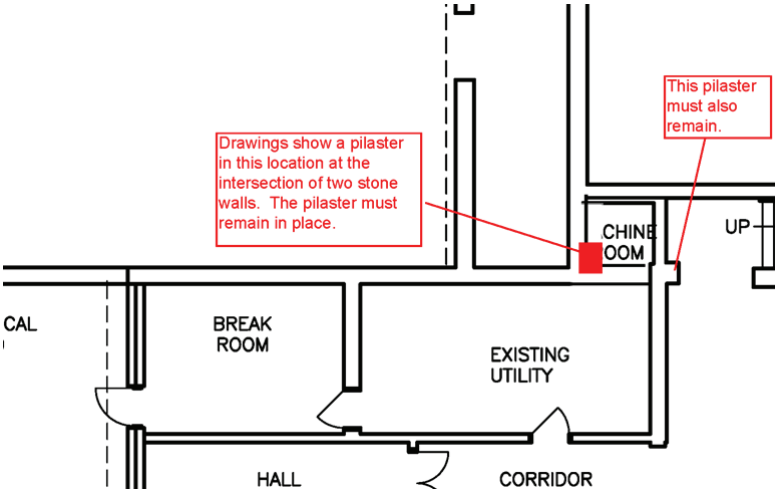


Figure 6-5: Pilasters at proposed elevator location.

to ensure the stability of the existing walls on their foundations. This will require detailed structural and geotechnical analysis of the region adjacent to the elevator. Shoring will be required during construction to protect the structure. Walls below grade will need to be replaced with concrete retaining walls and new concrete foundations.

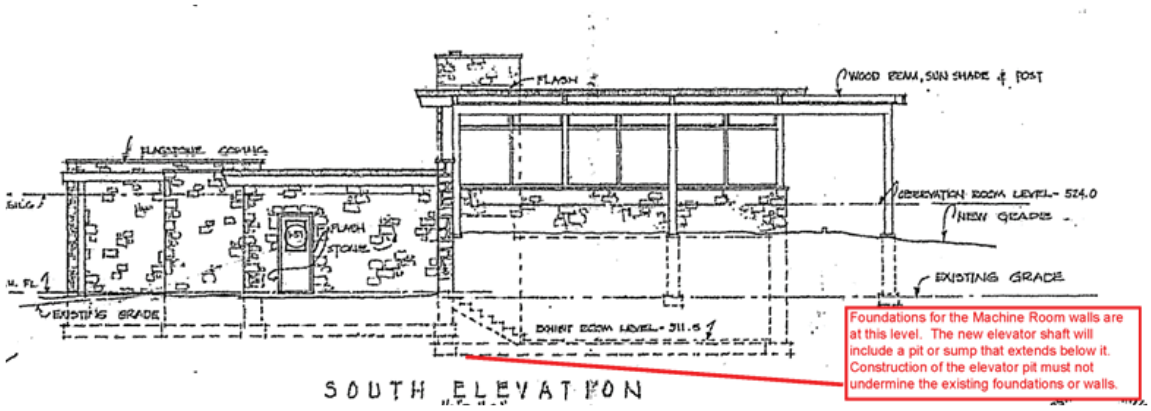


Figure 6-6: Elevator base at proposed elevator location.

Proposed Lobby/Restroom Expansion

Roofing at the New Vestibule and Corridor.
As shown in Figure 6-7, at present, the area outside the restrooms currently is covered by a sunscreen, rather than a solid roof. A solid roof must sustain higher loads than a sunshade, and these loads will be conveyed to adjacent walls. The stone wall to the outside is very strong, and capable of sustaining roof loads. The restroom wall is already load-bearing, since it sustains the weight of the roof above the restrooms. Most likely, it is capable of sustaining the added load of the additional

corridor roofing; however, additional analysis is necessary to determine the suitability of this assumption.

The walls shown in blue will need to be structural walls with concrete foundations. The storefront would need to be structural or steel tubes can be installed at the mullions. The steel tubes support steel or wood beams above that support the new and existing roof framing.

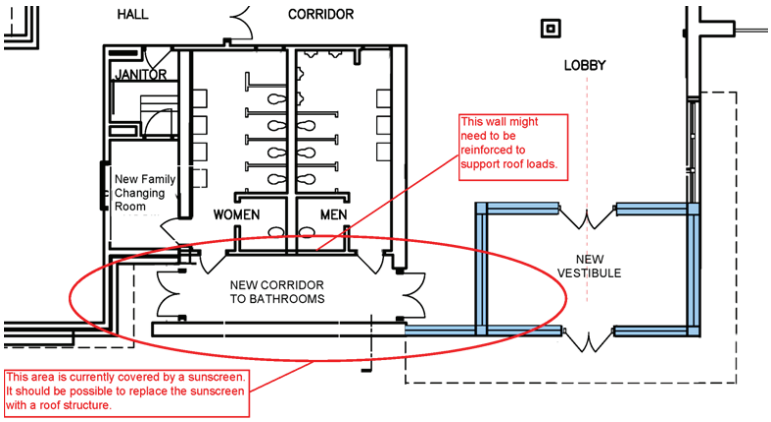


Figure 6-7: Roofing outside restrooms.

Column Supports for the Sunscreen

As shown in Figure 6-8, it is likely that the new sunscreen will be supported by light wooden columns at the outer edges, as was done for the original sunscreen. However, since the sunscreen does not project very far from the face of the building, it should be possible to cantilever the sunscreen from the existing building structure without the use of outer column supports. Most of the new framing for cantilevered sunscreen would be tied into the framing for the new vestibule. The sunscreen will have to be at the same elevation as the roof for a cantilever to be used. For the front, the roof joists can be one piece to form the new roof and the sunscreen. Where the joists are extended for the sunscreen, they will need to be multiply members. For the side elevation, several joists will need to be removed and a new beam installed that extends from the existing built up beam in the lobby to the end of the sunscreen. New framing is required along the side elevation from the built up lobby beam to the front wall.

If the sunscreen is not at the same elevation as the roof, a cantilever can not be installed for the sunscreen. In this case, columns will have to be installed at the outside edge of the sunscreen similar to what is existing.

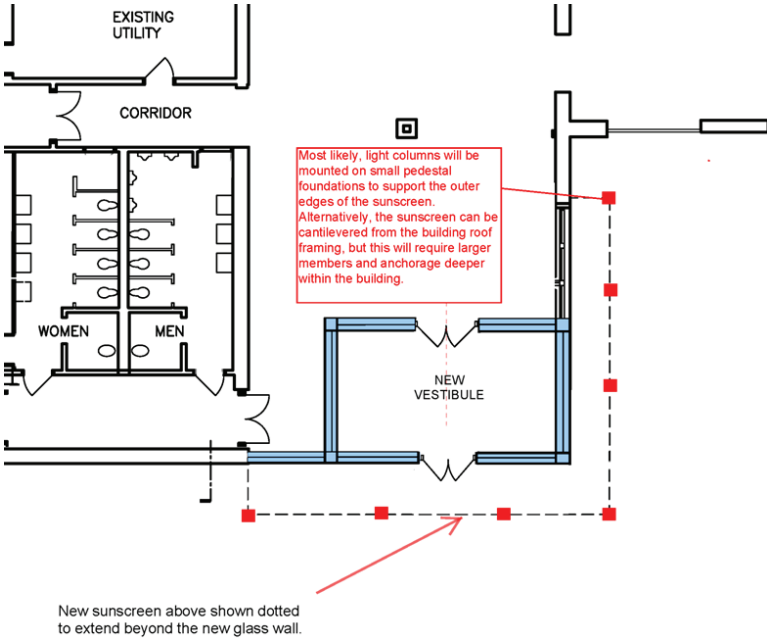


Figure 6-8: Sunscreen supports.

Building Systems Recommendations

Mechanical

Some of the systems in the building serve more than one zone with each zone having a different load profile. It has been reported that the existing HVAC systems in the building do not currently provide adequate temperature and humidity control. The lobby and bookstore HVAC should be replaced and can be combined on one system.

Vertical blinds had been added to windows in the bookstore to help with the solar heat gain. A window glazing should be considered to help with the solar heat gain which will still allow visitors to look outside.

Replace the lower level museum and observation deck HVAC system. A separate system should be provided for each area as both of these areas have different space requirements. The lower museum should be provided with humidity control. The existing mechanical room could be reconfigured to allow for an additional system.

Replace the auditorium HVAC system to include the ductwork and diffusers. The system currently does not meet the space requirements and the air distribution in the space could be greatly improved. The air handling unit that serves the theatre

is currently located in the ceiling of the break room. If it is more desirable for this unit to be easily accessible to maintain, then the break room will need to be converted into a mechanical room.

The HVAC system serving the office space in the lower level should be replaced with a more specialized system which can provide humidity control.

Replace the domestic water heater. It is reaching the end of its useful life.

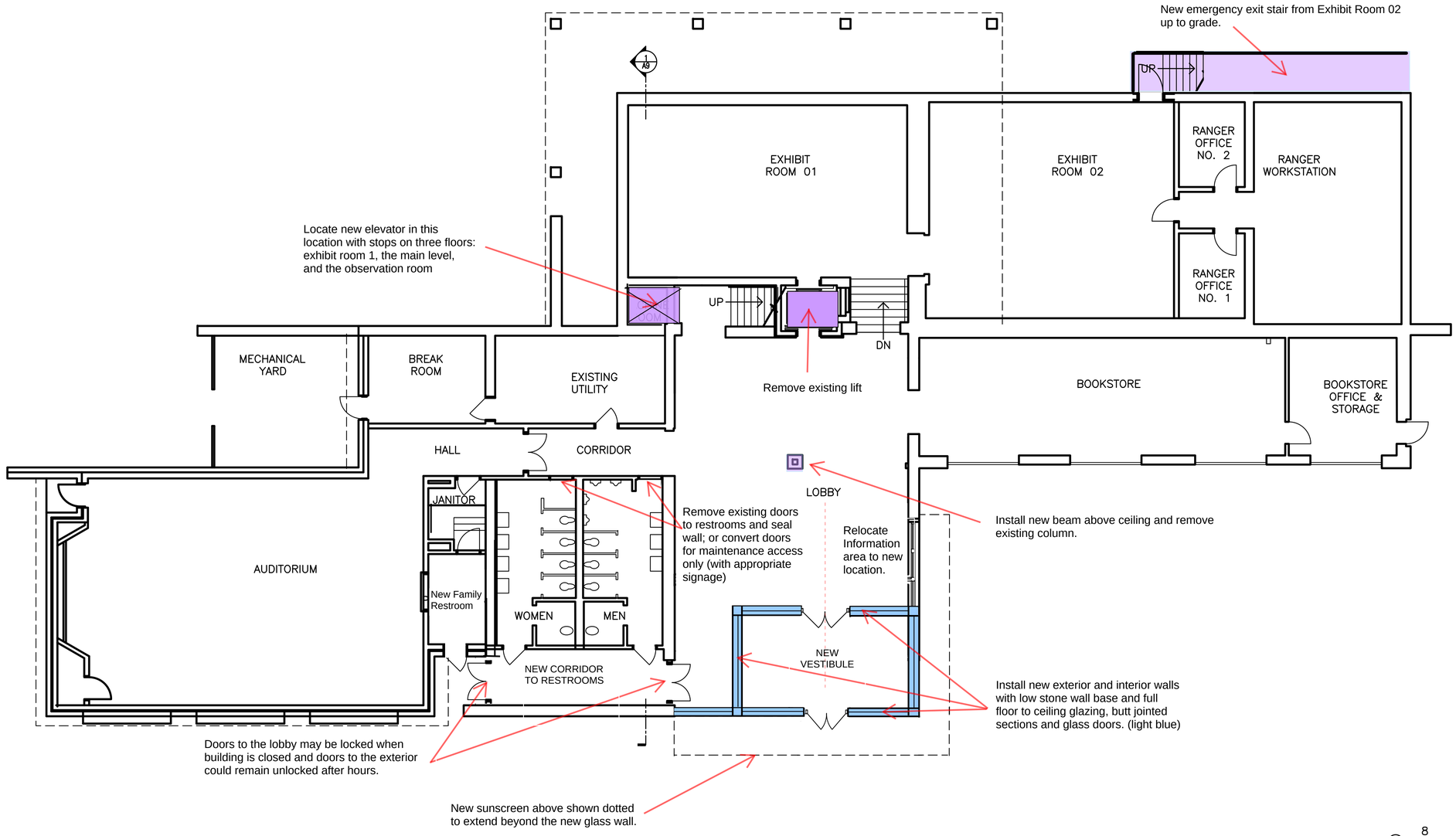
Electrical

The light fixtures should be rewired to meet the National Electric Code. This is a critical item and should be completed as soon as possible.

The lighting inverter is reaching the end of its useful life and should be replaced.

The fire alarm system should be replaced with an addressable fire alarm system.

The electrical distribution system should be replaced to include the panelboards and feeders. They are reaching the end of their useful life.



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1/A5 FIRST FLOOR PLAN – CURRENT
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DESIGNED: MV CADD MV TECH. REVIEW: TR DATE: 06/12/2017	SUB SHEET NO. A5	TITLE OF SHEET FIRST FLOOR PLAN HISTORIC STRUCTURE REPORT FOR THE ANTIETAM NATIONAL BATTLEFIELD VISITOR CENTER	DRAWING NO. 646 124865 PMIS/PKG NO. GATE201069C SHEET 5 OF 9

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Antietam National Battlefield Archives

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Appendices

Appendix A:
Hazardous Materials Testing Report Appendices

Appendix A
Asbestos Bulk Sampling Results & Laboratory Accreditations

EMSL Analytical, Inc.

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EMSL Order:	191701487
Customer ID:	ARCE78
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Project ID:	

Attention:	Josh Floyd	**Phone:**	(410) 365-6457
	Arc Environmental	**Fax:**	(410) 962-1065
	1311 Haubert Street	**Received Date:**	02/10/2017 10:25 AM
	Baltimore, MD 21230	**Analysis Date:**	02/14/2017 - 02/16/2017
		Collected Date:	02/09/2017
Project:	Antietam Visitor Center		

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
01 *191701487-0001*	2x2 Deep Pattern - Observation Deck	Gray/White Fibrous Heterogeneous	25% Cellulose 30% Min. Wool HA: CT1	20% Ca Carbonate 10% Perlite 15% Non-fibrous (Other)	None Detected
02 *191701487-0002*	2x2 Deep Pattern - Observation Deck	Gray/White Fibrous Heterogeneous	25% Cellulose 30% Min. Wool HA: CT1	20% Ca Carbonate 10% Perlite 15% Non-fibrous (Other)	None Detected
62 *191701487-0003*	2x2 Deep Pattern - Observation Deck	Tan Fibrous Homogeneous	40% Cellulose 40% Glass HA: CT1	10% Perlite 10% Non-fibrous (Other)	None Detected
03-Cove Base *191701487-0004*	4" Black w/ Mastic - OD, Mueseum, Projection Booth	Black Non-Fibrous Homogeneous	HA: OB1	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
03-Mastic *191701487-0004A*	4" Black w/ Mastic - OD, Mueseum, Projection Booth	Brown Non-Fibrous Homogeneous	HA: OB1	100% Non-fibrous (Other)	None Detected
04-Cove Base *191701487-0005*	4" Black w/ Mastic - OD, Mueseum, Projection Booth	Black Non-Fibrous Homogeneous	HA: OB1	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
04-Mastic *191701487-0005A*	4" Black w/ Mastic - OD, Mueseum, Projection Booth	Tan Non-Fibrous Homogeneous	HA: OB1	100% Non-fibrous (Other)	None Detected
05-Cove Base *191701487-0006*	4" Black w/ Mastic - OD, Mueseum, Projection Booth	Gray/Black Non-Fibrous Homogeneous	HA: OB1	15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
05-Mastic *191701487-0006A*	4" Black w/ Mastic - OD, Mueseum, Projection Booth	Gray/Tan Non-Fibrous Homogeneous	HA: OB1	100% Non-fibrous (Other)	None Detected
20 *191701487-0007*	Drywall - M, Gift Shop, GS Office	Brown/Gray Fibrous Heterogeneous	10% Cellulose HA: DW1	65% Gypsum 25% Non-fibrous (Other)	None Detected
21 *191701487-0008*	Drywall - M, Gift Shop, GS Office	Brown/Gray Fibrous Heterogeneous	10% Cellulose HA: DW1	65% Gypsum 25% Non-fibrous (Other)	None Detected
22 *191701487-0009*	Drywall - M, Gift Shop, GS Office	Tan/White Fibrous Heterogeneous	3% Cellulose 4% Glass HA: DW1	90% Gypsum 3% Non-fibrous (Other)	None Detected

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
54 *191701487-0010*	Joint Compound - M, GS, GSO	White Non-Fibrous Homogeneous	HA: JC1	10% Mica 90% Non-fibrous (Other)	None Detected
55 *191701487-0011*	Joint Compound - M, GS, GSO	White Non-Fibrous Homogeneous	HA: JC1	10% Mica 90% Non-fibrous (Other)	None Detected
56 *191701487-0012*	Joint Compound - M, GS, GSO	White Non-Fibrous Homogeneous	HA: JC1	10% Mica 90% Non-fibrous (Other)	None Detected
57 *191701487-0013*	Joint Compound - M, GS, GSO	White Non-Fibrous Homogeneous	HA: JC1	10% Mica 90% Non-fibrous (Other)	None Detected
64 *191701487-0014*	Joint Compound - M, GS, GSO	White Non-Fibrous Homogeneous	HA: JC1	15% Mica 85% Non-fibrous (Other)	None Detected
65 *191701487-0015*	Joint Compound - M, GS, GSO	White Non-Fibrous Homogeneous	HA: JC1	15% Mica 85% Non-fibrous (Other)	None Detected
18 *191701487-0016*	2x2 Black Pinhole & Gauge - Museum	Gray/White/Black Fibrous Heterogeneous	30% Cellulose 25% Min. Wool HA: CT2	35% Perlite 10% Non-fibrous (Other)	None Detected
19 *191701487-0017*	2x2 Black Pinhole & Gauge - Museum	Gray/White/Black Fibrous Heterogeneous	30% Cellulose 25% Min. Wool HA: CT2	35% Perlite 10% Non-fibrous (Other)	None Detected
36 *191701487-0018*	2x2 Black Pinhole & Gauge - Museum	Gray/White Fibrous Homogeneous	40% Cellulose 7% Glass HA: CT2	40% Perlite 13% Non-fibrous (Other)	None Detected
25 *191701487-0019*	2x4 Pinhole & Gauge - Offices	Gray/White Fibrous Heterogeneous	30% Cellulose 30% Min. Wool HA: CT3	30% Perlite 10% Non-fibrous (Other)	None Detected
26 *191701487-0020*	2x4 Pinhole & Gauge - Offices	Gray/White Fibrous Heterogeneous	30% Cellulose 30% Min. Wool HA: CT3	30% Perlite 10% Non-fibrous (Other)	None Detected
27 *191701487-0021*	2x4 Pinhole & Gauge - Offices	Gray/White Fibrous Homogeneous	35% Cellulose 15% Glass HA: CT3	35% Perlite 15% Non-fibrous (Other)	None Detected
28-Cove Base *191701487-0022*	4" Dark Grey w/ Mastic - Offices	Gray/Black Non-Fibrous Heterogeneous	HA: CB2	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
28-Mastic *191701487-0022A*	4" Dark Grey w/ Mastic - Offices	Tan Non-Fibrous Homogeneous	HA: CB2	100% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
29-Cove Base *191701487-0023*	4" Dark Grey w/ Mastic - Offices	Gray/Black Non-Fibrous Heterogeneous		45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
			HA: CB2		
29-Mastic *191701487-0023A*	4" Dark Grey w/ Mastic - Offices	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
			HA: CB2		
30-Cove Base *191701487-0024*	4" Dark Grey w/ Mastic - Offices	Gray Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
			HA: CB2		
30-Mastic *191701487-0024A*	4" Dark Grey w/ Mastic - Offices	White Non-Fibrous Homogeneous	1% Synthetic	99% Non-fibrous (Other)	None Detected
			HA: CB2		
23 *191701487-0025*	1x1 Spline - Offices	White/Yellow Fibrous Heterogeneous	85% Glass	15% Non-fibrous (Other)	None Detected
			HA: CT4		
24 *191701487-0026*	1x1 Spline - Offices	White/Yellow Fibrous Heterogeneous	85% Glass	15% Non-fibrous (Other)	None Detected
			HA: CT4		
31 *191701487-0027*	1x1 Spline - Offices	White/Yellow Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
			HA: CT4		
32-Floor Tile *191701487-0028*	6"x6" Patterned - Offices	Tan/White Non-Fibrous Heterogeneous		35% Ca Carbonate 65% Non-fibrous (Other)	None Detected
			HA: LN1		
32-Mastic *191701487-0028A*	6"x6" Patterned - Offices	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
			HA: LN1		
33-Floor Tile *191701487-0029*	6"x6" Patterned - Offices	Tan/White Non-Fibrous Heterogeneous		35% Ca Carbonate 65% Non-fibrous (Other)	None Detected
			HA: LN1		
33-Mastic *191701487-0029A*	6"x6" Patterned - Offices	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
			HA: LN1		
34-Floor Tile *191701487-0030*	6"x6" Patterned - Offices	White Non-Fibrous Homogeneous	8% Glass	20% Ca Carbonate 72% Non-fibrous (Other)	None Detected
			HA: LN1		
34-Mastic *191701487-0030A*	6"x6" Patterned - Offices	Yellow Non-Fibrous Homogeneous	1% Synthetic	99% Non-fibrous (Other)	None Detected
			HA: LN1		
39 *191701487-0031*	2x2 Pinhole - Gift Shop	Gray/White Fibrous Heterogeneous	30% Cellulose 30% Min. Wool	30% Perlite 10% Non-fibrous (Other)	None Detected
			HA: CT5		

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
40 *191701487-0032*	2x2 Pinhole - Gift Shop	Gray/White Fibrous Heterogeneous	30% Cellulose 30% Min. Wool HA: CT5	30% Perlite 10% Non-fibrous (Other)	None Detected
41 *191701487-0033*	2x2 Pinhole - Gift Shop	Gray/White Fibrous Homogeneous	35% Cellulose 10% Glass HA: CT5	45% Perlite 10% Non-fibrous (Other)	None Detected
42 *191701487-0034*	2x4 Normhole - GSO	Gray/White Fibrous Heterogeneous	30% Cellulose 25% Min. Wool HA: CT6	35% Perlite 10% Non-fibrous (Other)	None Detected
43 *191701487-0035*	2x4 Normhole - GSO	Gray/White Fibrous Heterogeneous	30% Cellulose 25% Min. Wool HA: CT6	35% Perlite 10% Non-fibrous (Other)	None Detected
44 *191701487-0036*	2x4 Normhole - GSO	Gray/White Fibrous Homogeneous	45% Cellulose 3% Glass HA: CT6	45% Perlite 7% Non-fibrous (Other)	None Detected
45-Cove Base *191701487-0037*	4" Grey w/ Mastic - GS	Gray Non-Fibrous Homogeneous	HA: CB3	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
45-Mastic *191701487-0037A*	4" Grey w/ Mastic - GS	Yellow Non-Fibrous Homogeneous	HA: CB3	100% Non-fibrous (Other)	None Detected
46-Cove Base *191701487-0038*	4" Grey w/ Mastic - GS	Gray Non-Fibrous Homogeneous	HA: CB3	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
46-Mastic *191701487-0038A*	4" Grey w/ Mastic - GS		HA: CB3		Insufficient Material
47-Cove Base *191701487-0039*	4" Grey w/ Mastic - GS	Gray Non-Fibrous Homogeneous	HA: CB3	15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
47-Mastic *191701487-0039A*	4" Grey w/ Mastic - GS	Tan/Yellow Non-Fibrous Homogeneous	15% Cellulose HA: CB3	85% Non-fibrous (Other)	None Detected
48-Cove Base *191701487-0040*	6" Tan w/ Mastic - GSO	Tan Non-Fibrous Homogeneous	HA: CB4	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
48-Mastic *191701487-0040A*	6" Tan w/ Mastic - GSO	Yellow Non-Fibrous Homogeneous	HA: CB4	100% Non-fibrous (Other)	None Detected
49-Cove Base *191701487-0041*	6" Tan w/ Mastic - GSO	Tan Non-Fibrous Homogeneous	HA: CB4	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
49-Mastic *191701487-0041A*	6" Tan w/ Mastic - GSO	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
			HA: CB4		
50-Cove Base *191701487-0042*	6" Tan w/ Mastic - GSO	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
			HA: CB4		
50-Mastic *191701487-0042A*	6" Tan w/ Mastic - GSO				Insufficient Material
			HA: CB4		
16 *191701487-0043*	2x2 Black Rough Text. - Lobby	Black/Silver/Yellow Fibrous Heterogeneous	5% Cellulose 50% Min. Wool	15% Quartz 15% Perlite 15% Non-fibrous (Other)	None Detected
			HA: CT7		
17 *191701487-0044*	2x2 Black Rough Text. - Lobby	Black/Silver/Yellow Fibrous Heterogeneous	5% Cellulose 60% Min. Wool	15% Quartz 15% Perlite 5% Non-fibrous (Other)	None Detected
			HA: CT7		
38 *191701487-0045*	2x2 Black Rough Text. - Lobby	Black/Silver Fibrous Heterogeneous	1% Cellulose 60% Min. Wool	39% Non-fibrous (Other)	None Detected
			HA: CT7		
59-Floor Tile *191701487-0046*	12x12 Black w/ Mastic - Projection Room	Various/Black Non-Fibrous Homogeneous		45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
			HA: FT1		
59-Mastic *191701487-0046A*	12x12 Black w/ Mastic - Projection Room	Black Non-Fibrous Homogeneous		15% Quartz 80% Non-fibrous (Other)	5% Chrysotile
			HA: FT1		
60-Floor Tile *191701487-0047*	12x12 Black w/ Mastic - Projection Room	Various/Black Non-Fibrous Homogeneous		45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
			HA: FT1		
60-Mastic *191701487-0047A*	12x12 Black w/ Mastic - Projection Room				Positive Stop (Not Analyzed)
			HA: FT1		
61-Floor Tile *191701487-0048*	12x12 Black w/ Mastic - Projection Room	Brown/Black Non-Fibrous Homogeneous		60% Ca Carbonate 40% Non-fibrous (Other)	None Detected
			HA: FT1		
61-Mastic *191701487-0048A*	12x12 Black w/ Mastic - Projection Room				Positive Stop (Not Analyzed)
			HA: FT1		
10-Floor Tile *191701487-0049*	9x9 Tan & White w/ Mastic - OD	Tan/White Non-Fibrous Homogeneous		45% Ca Carbonate 50% Non-fibrous (Other)	5% Chrysotile
			HA: FT2		
10-Mastic *191701487-0049A*	9x9 Tan & White w/ Mastic - OD	Black Non-Fibrous Homogeneous		20% Quartz 73% Non-fibrous (Other)	7% Chrysotile
			HA: FT2		
11-Floor Tile *191701487-0050*	9x9 Tan & White w/ Mastic - OD				Positive Stop (Not Analyzed)
			HA: FT2		

Initial report from: 02/16/2017 17:03:14

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Tel/Fax: (301) 937-5700 / (301) 937-5701
http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 191701487
Customer ID: ARCE78
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
11-Mastic *191701487-0050A*	9x9 Tan & White w/ Mastic - OD		HA: FT2		Positive Stop (Not Analyzed)
63-Floor Tile *191701487-0051*	9x9 Tan & White w/ Mastic - OD		HA: FT2		Positive Stop (Not Analyzed)
63-Mastic *191701487-0051A*	9x9 Tan & White w/ Mastic - OD		HA: FT2		Positive Stop (Not Analyzed)
12 *191701487-0052*	Carpet Mastic - OD, GS, GSO	Yellow Non-Fibrous Homogeneous	HA: CM1	100% Non-fibrous (Other)	None Detected
57 *191701487-0053*	Carpet Mastic - OD, GS, GSO	Yellow Non-Fibrous Homogeneous	HA: CM1	100% Non-fibrous (Other)	None Detected
58 *191701487-0054*	Carpet Mastic - OD, GS, GSO	Tan/Yellow Non-Fibrous Homogeneous	5% Synthetic HA: CM1	95% Non-fibrous (Other)	None Detected
13-Skim Coat *191701487-0055*	Wall Plaster - OD	White/Blue Non-Fibrous Homogeneous	HA: PL1	5% Quartz 45% Ca Carbonate 50% Non-fibrous (Other)	None Detected
13-Rough Coat *191701487-0055A*	Wall Plaster - OD	Gray/Various Non-Fibrous Homogeneous	HA: PL1	60% Quartz 15% Perlite 25% Non-fibrous (Other)	None Detected
14-Skim Coat *191701487-0056*	Wall Plaster - OD	White Non-Fibrous Homogeneous	HA: PL1	5% Quartz 45% Ca Carbonate 50% Non-fibrous (Other)	None Detected
14-Rough Coat *191701487-0056A*	Wall Plaster - OD	Gray/Various Non-Fibrous Homogeneous	HA: PL1	60% Quartz 20% Perlite 20% Non-fibrous (Other)	None Detected
15-Skim Coat *191701487-0057*	Wall Plaster - OD	White Non-Fibrous Homogeneous	HA: PL1	100% Non-fibrous (Other)	None Detected
15-Rough Coat *191701487-0057A*	Wall Plaster - OD	Gray/White Non-Fibrous Homogeneous	HA: PL1	35% Perlite 65% Non-fibrous (Other)	None Detected
35-Floor Tile *191701487-0058*	Under LN1 - Offices	White Non-Fibrous Homogeneous	HA: FT3	45% Ca Carbonate 52% Non-fibrous (Other)	3% Chrysotile
35-Mastic *191701487-0058A*	Under LN1 - Offices	Black Non-Fibrous Homogeneous	HA: FT3	98% Non-fibrous (Other)	2% Chrysotile
35-Mastic 2 *191701487-0058B*	Under LN1 - Offices	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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EMSL Order: 191701487
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Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
			HA: FT3		
36-Floor Tile *191701487-0059*	Under LN1 - Offices				Positive Stop (Not Analyzed)
			HA: FT3		
36-Mastic *191701487-0059A*	Under LN1 - Offices				Positive Stop (Not Analyzed)
			HA: FT3		
36-Mastic 2 *191701487-0059B*	Under LN1 - Offices	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
			HA: FT3		
37-Floor Tile *191701487-0060*	Under LN1 - Offices				Positive Stop (Not Analyzed)
			HA: FT3		
37-Mastic *191701487-0060A*	Under LN1 - Offices				Positive Stop (Not Analyzed)
			HA: FT3		
37-Mastic 2 *191701487-0060B*	Under LN1 - Offices	White/Yellow Fibrous Heterogeneous	3% Glass	97% Non-fibrous (Other)	None Detected
			HA: FT3		
51-Skim Coat *191701487-0061*	Plaster Ceiling - GS, GSO	White/Yellow Non-Fibrous Heterogeneous		5% Quartz 45% Ca Carbonate 50% Non-fibrous (Other)	None Detected
			HA: PL2		
51-Rough Coat *191701487-0061A*	Plaster Ceiling - GS, GSO	Gray/Various Non-Fibrous Homogeneous		60% Quartz 20% Perlite 20% Non-fibrous (Other)	None Detected
			HA: PL2		
52-Skim Coat *191701487-0062*	Plaster Ceiling - GS, GSO	White/Yellow Non-Fibrous Heterogeneous		5% Quartz 45% Ca Carbonate 50% Non-fibrous (Other)	None Detected
			HA: PL2		
52-Rough Coat *191701487-0062A*	Plaster Ceiling - GS, GSO	Gray/Various Non-Fibrous Homogeneous		60% Quartz 20% Perlite 20% Non-fibrous (Other)	None Detected
			HA: PL2		
53-Skim Coat *191701487-0063*	Plaster Ceiling - GS, GSO	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
			HA: PL2		
53-Rough Coat *191701487-0063A*	Plaster Ceiling - GS, GSO	Gray/White Non-Fibrous Homogeneous		35% Perlite 65% Non-fibrous (Other)	None Detected
			HA: PL2		
66-Floor Tile *191701487-0064*	9x9 Grey w/ Mastic - GSO	Gray Non-Fibrous Homogeneous		45% Ca Carbonate 51% Non-fibrous (Other)	4% Chrysotile
			HA: FT4		
66-Mastic *191701487-0064A*	9x9 Grey w/ Mastic - GSO	Black Non-Fibrous Homogeneous		15% Quartz 82% Non-fibrous (Other)	3% Chrysotile
			HA: FT4		

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
67-Floor Tile *191701487-0065*	9x9 Grey w/ Mastic - GSO		HA: FT4		Positive Stop (Not Analyzed)
67-Mastic *191701487-0065A*	9x9 Grey w/ Mastic - GSO		HA: FT4		Positive Stop (Not Analyzed)
68-Floor Tile *191701487-0066*	9x9 Grey w/ Mastic - GSO		HA: FT4		Positive Stop (Not Analyzed)
68-Mastic *191701487-0066A*	9x9 Grey w/ Mastic - GSO		HA: FT4		Positive Stop (Not Analyzed)
69 *191701487-0067*	6" Patterned Lindleum - Break Room	Gray/Tan/White Non-Fibrous Heterogeneous	5% Cellulose HA: LN2	35% Ca Carbonate 60% Non-fibrous (Other)	None Detected
70 *191701487-0068*	6" Patterned Lindleum - Break Room	Gray/Tan/White Non-Fibrous Heterogeneous	5% Cellulose HA: LN2	35% Ca Carbonate 60% Non-fibrous (Other)	None Detected
71 *191701487-0069*	6" Patterned Lindleum - Break Room	Gray/White Fibrous Homogeneous	10% Cellulose 10% Glass HA: LN2	80% Non-fibrous (Other)	None Detected
72-Floor Tile *191701487-0070*	Under LN2 - Break Room	Tan Non-Fibrous Homogeneous	HA: FT5	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
72-Mastic *191701487-0070A*	Under LN2 - Break Room	Yellow Non-Fibrous Homogeneous	HA: FT5	100% Non-fibrous (Other)	None Detected
73-Floor Tile *191701487-0071*	Under LN2 - Break Room	Tan Non-Fibrous Homogeneous	HA: FT5	45% Ca Carbonate 55% Non-fibrous (Other)	None Detected
73-Mastic *191701487-0071A*	Under LN2 - Break Room	Yellow Non-Fibrous Homogeneous	HA: FT5	100% Non-fibrous (Other)	None Detected
74-Floor Tile *191701487-0072*	Under LN2 - Break Room	Tan/Yellow Non-Fibrous Homogeneous	HA: FT5	60% Ca Carbonate 40% Non-fibrous (Other)	None Detected
74-Mastic *191701487-0072A*	Under LN2 - Break Room	Tan/Yellow Non-Fibrous Homogeneous	HA: FT5	100% Non-fibrous (Other)	None Detected

Initial report from: 02/16/2017 17:03:14

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EMSL Order:	191701487
Customer ID:	ARCE78
Customer PO:	
Project ID:	

Analyst(s)

Matthew Daigneault (29)
William Chrobak (66)

Joe Centifonti, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government . Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Beltsville, MD NVLAP Lab Code 200293-0

Initial report from: 02/16/2017 17:03:14

OrderID: 191701487

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 191701487

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

Company: Arc Environmental	**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 1311 Hubert St E	
City: Baltimore **State/Province:** MD	**Zip/Postal Code:** 21230 **Country:**
Report To (Name): Josh Floyd	**Telephone #:** 410 659 9971
Email Address: jfloyd@arcenvironmental.com	**Fax #:** **Purchase Order:**
Project Name/Number: Antietam Visitor Center	**Please Provide Results:** ☐ Fax ☒ Email
U.S. State Samples Taken: MD	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PLM - Bulk (reporting limit)	TEM – Bulk
☒ PLM EPA 600/R-93/116 (<1%)	☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
☐ PLM EPA NOB (<1%)	☐ NY ELAP Method 198.4 (TEM)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
☐ NIOSH 9002 (<1%)	☐ TEM Qualitative via Filtration Prep Technique
☐ NY ELAP Method 198.1 (friable in NY)	☐ TEM Qualitative via Drop Mount Prep Technique
☐ NY ELAP Method 198.6 NOB (non-friable-NY)	**Other**
☐ OSHA ID-191 Modified	☐
☐ Standard Addition Method	

☒ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 2/9/17

Samplers Name: Josh Floyd **Samplers Signature:**

Sample #	HA #	Sample Location	Material Description
01,02,03	CT1	Observation Deck	2x2 Deep Pattern
03,04,05	CB1	O.D., Museum, Projection Booth	4" Black w/ mastic
20,21,22	DW1	M, Gift shop, G.S. office	Drywall
54,55,56,57,64,65	JC1	M, GS, GSO	Joint compound
18,19,36	CT2	Museum	2x2 Black pinhole & Fissure
25,26,27	CT3	Offices	2x4 pinhole & fissure
28,29,30	CB2	↓	4" Dark Grey w/ mastic
23,24,31	CT4	↓	1x1 spline
32,33,34	LM1	↓	6"x6" Patterned
39,40,41	CT5	Gift shop	2x2 pinhole

Client Sample # (s): **Total # of Samples:** 74

Relinquished (Client): **Date:** 2/10/2017 **Time:** 10:20

Received (Lab): **Date:** 2/10/2017 **Time:** 10:25AM

Comments/Special Instructions: Walkin

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 191701487

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
42,43,44	CT6	G.S.O.	2x4 wornhole
45,46,47	CB3	G.S.	4" Grey w/ mastic
48,49,50	CB4	G.S.O.	6" Tan w/ mastic
16,17,38	CT7	Lobby	2x2 Black rough text.
59,60,61	FT1	~~Proj~~ Projection Room	12x12 Black w/ mastic
10,11,63	FT2	O.D.	9x9 Tan & white w/ mastic
12,57,58	CN1	O.D. G.S. G.S.O.	Carpet mastic
13,14,15	PL1	O.D.	wall plaster
35,36,37	FT3	Offices	Under 2N1
51,52,53	PL2	G.S. G.S.O.	Plaster ceiling
66,67,68	FT4	G.S.O.	9x9 Grey w/ mastic
69,70,71	2N2	Break Room	6" Patterned Linoleum
72,73,74	FT5	" "	Under 2N2

***Comments/Special Instructions:**

Page 2 of 2 pages

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200293-0

EMSL Analytical, Inc.

Beltsville, MD

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2017-01-01 through 2017-12-31

Effective Dates

For the National Voluntary Laboratory Accreditation Program

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Analytical, Inc.
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Beltsville, MD 20705
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http://www.emsl.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 200293-0

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA 600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

Effective 2017-01-01 through 2017-12-31

Appendix B
Summary of Materials Tested for Asbestos

Summary of Sampled Suspect Asbestos-containing Materials Antietam Visitor Center – Antietam National Battlefield			
HA	**Material Description**	**Sample Number**	**Result**
CT1	2’ x 2’ Deep Patterned Ceiling Tile	01 02 62	None Detected None Detected None Detected
CB1	4” Black Covebase and Associated Mastic	03 04 05	None Detected None Detected None Detected
DW1	Drywall	20 21 22	None Detected None Detected None Detected
JC1	Joint Compound	54 55 56 57 64 65	None Detected None Detected None Detected None Detected None Detected None Detected
CT2	2’ x 2’ Black Pinhole and Gouge Ceiling Tile	18 19 36	None Detected None Detected None Detected
CT3	2’ x 4’ Pinhole and Gouge Ceiling Tile	25 26 27	None Detected None Detected None Detected
CB2	4” Dark Grey Covebase and Associated Mastic	28 29 30	None Detected None Detected None Detected
CT4	1’ x 1’ Spline Ceiling Tile	23 24 31	None Detected None Detected None Detected
LN1	6” x 6” Patterned Linoleum	32 33 34	None Detected None Detected None Detected
CT5	2’ x 2’ Pinhole Ceiling Tile	39 40 41	None Detected None Detected None Detected
CT6	2’ x 4’ Wormhole Ceiling Tile	42 43 44	None Detected None Detected None Detected
CB3	4” Grey Covebase and Mastic	45 46 47	None Detected None Detected None Detected
CB4	6” Tan Covebase and Mastic	48 49 50	None Detected None Detected None Detected
CT7	2’ x 2’ Black Rough Textured Ceiling Tile	16 17 38	None Detected None Detected None Detected

Summary of Sampled Suspect Asbestos-containing Materials Antietam Visitor Center – Antietam National Battlefield			
HA	**Material Description**	**Sample Number**	**Result**
FT1	12” x 12” Black Floor Tile	59A 60A 61A	None Detected None Detected None Detected
FTM1	**Mastic Associated with FT1**	**59B** **60B** **61B**	**5% Chrysotile**
FT2	**9” x 9” Tan with White Floor Tile (under carpet)**	**10A** **11A** **63A**	**5% Chrysotile**
FTM2	**Mastic Associated with FT2**	**10B** **11B** **63B**	**7% Chrysotile**
CM1	Carpet Mastic	12 57 58	None Detected None Detected None Detected
PL1	Wall Plaster	13 14 15	None Detected None Detected None Detected
FT3	**Floor Tile Under LN1**	**35A** **36A** **37A**	**3% Chrysotile**
FTM3A	**Black Mastic Associated with FT3**	**35B** **36B** **37B**	**2% Chrysotile**
FTM3B	Yellow Mastic Associated with FT3	35C 36C 37C	None Detected None Detected None Detected
PL2	Ceiling Plaster	51 52 53	None Detected None Detected None Detected
FT4	**9” x 9” Grey Floor Tile (under carpet)**	**66A** **67A** **68A**	**4% Chrysotile**
FTM4	**Mastic Associated with FT4**	**66B** **67B** **68B**	**3% Chrysotile**
LN2	6” Patterned Linoleum	69 70 71	None Detected None Detected None Detected
FT5	Floor Tile Under LN2	72 73 74	None Detected None Detected None Detected
SC1	**Stage Curtain**	**N/A**	**Assumed**

Notes:

1) Materials in bold face print are Asbestos-Containing Materials (greater than 1% asbestos)

Appendix C
Inspectors' Accreditations

ATC GROUP SERVICES, LLC
9231 RUMSEY ROAD COLUMBIA, MD 21045 (410) 381-0232

CERTIFICATE OF ACHIEVEMENT

AWARDED TO

JOSH FLOYD

IN RECOGNITION OF SUCCESSFUL COMPLETION OF THE COURSE

ASBESTOS INSPECTOR/ MANAGEMENT PLANNER REVIEW

AN 8-HOUR ANNUAL REVIEW PROGRAM OF STUDY PRESENTED IN ACCORDANCE WITH THE PROVISIONS OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY MODEL ACCREDITATION PLAN, 40 CFR PART 763, APPENDIX C TO SUBPART E, FOR ACCREDITATION UNDER TSCA TITLE II.

PRESENTED BY

ATC GROUP SERVICES LLC

16-0599	October 5, 2016	Octoberber 5, 2017
CERTIFICATE #	COURSE DATE	EXAMINATION DATE	EXPIRATION DATE

COURSE DIRECTOR
CLAYTON E. MILLER

Asbestos License



Joshua Floyd
Name

Signature

Inspector/Management Planner Review
Course Title

Course Date: 10/05/2016
Exp Date: 10/05/2017
Exam Date: 10/20/2016

16027671

STATE OF MARYLAND

AEROSOL MONITORING & ANALYSIS, INC.

This is to certify that

HAN KWON

2916 WOODSHEAD TERRACE
YORK , PA 17403

has met the attendance requirements and successfully completed the course entitled

1-DAY LEAD RISK ASSESSOR REFRESHER

This Training Meets the Certification Requirements for DC, MD & VA

11/18/2015	11/18/2015		
Course Date	***Exam Date***		
		MIKE DRABO	
		Principal Instructor	
11/18/2017	11/18/2018	11/18/2017	
MD Expiration Date	***VA Expiration Date***	***DC Expiration Date***	
63576	VA63576	63576	E. Rush Barnett
Certification No.	***VA Certification No.***	***DC Certification No.***	***Course Director***

DC Lead Training Provider Accreditation No. DC12-001-RA-R-15

1331 Ashton Road *P.O.Box 646* *Hanover, MD 21076* *P: 410-684-3327* *F: 410-684-3724*

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Appendix D
XRF Data Sheets

XRF Lead-Based Paint Inspection Data Sheet - Interior

Client: _____ Address: Antietam Visitor Center

Date: 2/9/17

	Slop Sink Closet								Visitor Center office 1								Visitor Center office 2							
door																								
door jamb									B	W	I	White	0.1				<	W	I	White	0.0			
door casing	A	M	I	Brown	0.3				B	W	I	↓	0.0				C	W	I	White	0.2			
door transom																	C	W	I	↓	0.0			
door threshold																								
window sash																								
window sill																								
window casing																								
window well																								
baseboard																								
A wall	A	CB	I	Tan	0.2				A	DW	I	White	0.0				A	DW	I	White	0.2			
B wall	B	CB	I	↓	0.1				B	↓	↓	↓	0.3				B	↓	↓	↓	0.1			
C wall	C	CB	I	↓	0.2				C	↓	↓	↓	0.1				<	↓	↓	↓	0.1			
D wall	D	CB	I	↓	0.1				D	↓	↓	↓	0.1				D	↓	↓	↓	0.1			
ceiling																								
closet door																								
closet door jamb																								
closet door casing																								
closet shelf																								
closet shelf support																								
radiator																								
chair rail																								
crown molding																								
cabinet																								
pipe	A	M	I	OL	0.5																			
tub																								
floor																								
Handrail	A	M	D	Brown	0.2				A	W	I	wh	0.2											
Baseboard									B	↓	↓	↓	0.1											
↓									C	↓	↓	↓	0.1											
Closet shelf									D	↓	↓	↓	0.2				D	W	I	Grey	0.0			

The columns of data within each room are organized as follows: 1st column = wall code (A, B, C or D); 2nd column = substrate (W = Wood; M = Metal; P = Plaster; D = Drywall; B = Brick; C = Concrete)
3rd column = XRF reading; 4th column = paint condition (I = Intact; D = Deteriorated) NC = No component; NP = Not painted; CAR = Carpeted; COV = Covered

XRF Lead-Based Paint Inspection Data Sheet - Interior

Page 2 of ___

Client: _____ Address: Antietam Visitor Center

Date: 2/9/17

	Storage closet by handicap Elevator								Mech Rm								Break Rm							
door	D	W	D	Grey	0.0				A	M	I	Grey	0.1				B	M	I	Grey	0.0			
door jamb	D	↓	↓	↓	0.3				↓	↓	↓	↓	0.1				↓	↓	↓	↓	0.2			
door casing	D	↓	↓	↓	0.0				↓	↓	↓	↓	0.0				↓	↓	↓	↓	0.1			
door transom																								
door threshold																								
window sash																								
window sill																								
window casing																								
window well																								
baseboard																								
A wall	A	Dw	I	Grn	0.0				A	CB	I	wh	0.1											
B wall	B	↓	↓	↓	0.0				B	↓	↓	↓	0.1											
C wall	C				0.1				C				0.2											
D wall	D	↓	↓	↓	0.2				D	↓	↓	↓	0.1											
ceiling																								
closet door																								
closet door jamb																								
closet door casing																								
closet shelf																								
closet shelf support																								
radiator																								
chair rail																								
crown molding																								
cabinet																								
~~pipe~~ Duct									D	M	I	wh	0.1											
tub																								
floor																								
Pipe									B	M	I	Red	2.2											
Pipe Handle									B	M	I	Blue	1.2											
Pipe									B	M	I	Black	0.0											
HVAC unit									A	M	I	Green	0.0											
Door																	D	W	D	Brown	0.1			
Door Jamb																	D	↓	↓	↓	0.2			

The columns of data within each room are organized as follows: 1st column = wall code (A, B, C or D); 2nd column = substrate (W = Wood; M = Metal; P = Plaster; D = Drywall; B = Brick; C = Concrete)
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XRF Lead-Based Paint Inspection Data Sheet - Interior

Client: _____ Address: Antietam Visitor Center

Date: 2/9/17

	Men's RR								Gift Shop office								Gift Shop							
door	A	M	I	Grey	0.1				B	W	I	Grey	0.0											
door jamb													0.1											
door casing													0.2				B	W	I	Grey	0.0			
door transom																								
door threshold																								
window sash																								
window sill																								
window casing																	A	W	I	Beige	0.0			
window well																								
baseboard																								
A wall	A	CT	I	wh	0.1					D	I	W	0.0				A	DW	I	Grey	0.1			
B wall	B	CT	↓	↓	0.8					D	I	W	0.0											
C wall	C	CT	↓	↓	0.8					W		NP												
D wall	D	CT	↓	↓	0.1					D	I	W	0.1											
ceiling										Pl	D	Grey	0.1											
closet door																								
closet door jamb																								
closet door casing																								
closet shelf																								
closet shelf support																								
radiator																								
chair rail																								
crown molding																								
cabinet																								
pipe																								
tub																	C	m	I	wh	0.9			
floor																								
Ceiling	N/A	DW	I	wh	0.0																			

The columns of data within each room are organized as follows: 1st column = wall code (A, B, C or D); 2nd column = substrate (W = Wood; M = Metal; P = Plaster; D = Drywall; B = Brick; C = Concrete)
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XRF Lead-Based Paint Inspection Data Sheet - Interior

Client: _____ Address: _____

Date: 02/04

	Handicap Elevator					Museum						Lobby / Hallway				
door						A	W	I	Gry	0.1						
door jamb						↓	↓	↓	↓	0.2		A	W	I	Gry	0.1
door casing																
door transom																
door threshold																
window sash																
window sill																
window casing																
window well												A	W	I	Gry	0.1
baseboard																
A wall						A	DW	I	Tan	0.1						
B wall						B	↓	↓	↓	0.1						
C wall						C	↓	↓	↓	0.2						
D wall						D	↓	↓	↓	0.1						
ceiling																
closet door																
closet door jamb																
closet door casing																
closet shelf																
closet shelf support																
radiator																
chair rail																
crown molding																
cabinet																
pipe																
tub																
floor																
Frame	L	M	I	Gry	0.1											
Column																
Ceiling												NA	W	I	Gry	0.0
												N/A	DW	I	Gry	0.1

The columns of data within each room are organized as follows: 1st column = wall code (A, B, C or D); 2nd column = substrate (W = Wood; M = Metal; P = Plaster; D = Drywall; B = Brick; C = Concrete)
3rd column = XRF reading; 4th column = paint condition (I = Intact; D = Deteriorated) NC = No component; NP = Not painted; CAR = Carpeted; COV = Covered

XRF Lead-Based Paint Inspection Data Sheet - Interior

Client: _____ Address: Antietam Visitor Center

Date: 2/9/14

	Observation Center																			
Closet door	A	W	I	Beige	0.1															
door jamb																				
door casing	A	W	I	Beige	0.1															
door transom																				
door threshold																				
window sash																				
window sill																				
window casing	B	W	I	Beige	0.1															
window well																				
baseboard																				
A wall	A	DW	I	Beige	0.1															
B wall																				
C wall																				
D wall																				
ceiling																				
closet door																				
closet door jamb																				
closet door casing																				
closet shelf																				
closet shelf support																				
radiator																				
chair rail																				
crown molding																				
cabinet																				
pipe																				
tub																				
floor																				

The columns of data within each room are organized as follows: 1st column = wall code (A, B, C or D); 2nd column = substrate (W = Wood; M = Metal; P = Plaster; D = Drywall; B = Brick; C = Concrete)
3rd column = XRF reading; 4th column = paint condition (I = Intact; D = Deteriorated) NC = No component; NP = Not painted; CAR = Carpeted; COV = Covered

Appendix B:
Mortar Analysis Report

CONSERVATION SOLUTIONS inc

ART • ARCHITECTURE • ARTIFACTS

MORTAR ANALYSIS:
ANTIETAM NATIONAL BATTLEFIELD VISITORS CENTER
SHARPSBURG, MD



Prepared for:
Quinn Evans Architects
2121 Ward Place, NW, 4th Fl
Washington, DC 20037

Prepared by:
Caitlin Smith
Conservator & Project Manager

Emma Kousouris
Assistant Conservator & Project Manager

August 3, 2017

INTRODUCTION

At the request of Quinn Evans Architects, Conservation Solutions, Inc. performed analysis of mortar samples collected from the Antietam National Battlefield Visitors Center located in Sharpsburg, MD. CSI was tasked with analysis of up to four (4) representative samples. The five (5) samples were collected by a CSI conservator on May 30, 2017.

BUILDING DESCRIPTION

The Visitors Center is a stone structure constructed in 1962, with a theater addition circa 1980.

MORTAR ANALYSIS

A total of five (5) samples were collected by Caitlin Smith, of CSI on May 30, 2017. Samples were collected in the following locations (see also plan diagram and photo elevations on each sample page).

MDANBVC_A: West elevation, north end of theater addition

MDANBVC_B: Northwest corner of theater addition

MDANBVC_C: East elevation, south end of wall

MDANBVC_D: East elevation, north end of wall

MDANBVC_E: East elevation, north wall of trellised addition

The samples were analyzed through microscopic examination, Munsell color designation and standard wet chemical analysis. After color-matching the sample to the Munsell Soil Chart, the sample was dried, the dry weight measured, crushed, and weighed again.

To remove the acid-soluble portion of the samples, the crushed samples were placed in separate glass beakers and a 3M solution of hydrochloric acid (HCl) was added. The resulting solution was stirred and more HCl was added. This process was repeated until there was no further reaction. The sample was "washed" by pouring off the resulting yellow liquid, and adding distilled water. Each time the sediment was allowed to settle to the bottom of the beaker before pouring off the liquid. All of the liquid was passed through a paper filter to catch any remaining sediment. This process continued until the liquid was clear. What is left on the filter paper is the insoluble portion of the binder, or "fines" (residue of pigment, clay, or cement) and aggregate.

The aggregate and insoluble binder portions were weighed and compared against the original undigested weight, to determine the acid-soluble portion of the sample. The

various fractions were examined under a microscope (Leitz Orthoplan, transmitted light "Widefield" model) in order to determine the identifying characteristics of the various grain size fractions, including overall color, shape and grading of the aggregate.

The following definitions are used to describe the aggregate and insoluble fraction (fines):

Sphericity: the measure of how spherical or round an object is, which is defined as the ratio of the surface area of a sphere (with the same volume as the given particle) to the surface area of the particle. A sphere has a sphericity of 1, with decreasing values representing a loss of sphericity or a spherical shape.

Roundness: the degree of smoothing due to abrasion; the opposite of round is "angular"

Particle size: the diameter of individual grains of aggregate (quartz sand). The classifications range from silt to very coarse sand. The following samples exhibit fine sand (1/8 – 1/4 mm), medium sand (1/4 -1/2 mm), coarse sand (1/2 – 1.0 mm), very coarse sand (1.0 – 2.0 mm), and pebble (> 2.0 mm). Silt (< 1/16 mm) and very fine sand (1/16 – 1/8 mm) are described as fines.

Particle distribution: the separation of particles into discrete size ranges. In this analysis, the sorting was visually approximated into the following categories: very well sorted (grains are fairly uniform in size), well sorted, moderately sorted (similar quantities of various grain sizes), poorly sorted, and very poorly sorted (large disparity in grain size)

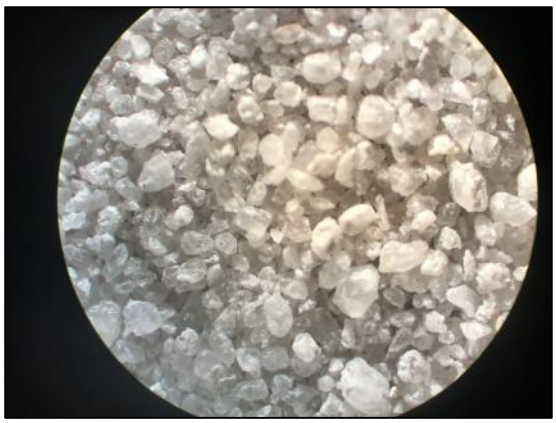
MDANBVC_A

This sample was collected from the west elevation, north end of the theater addition, and represents pointing mortar in stone masonry. The sample is reasonably hard to the touch. Not easily broken or crushed. The sample is smooth. The overall appearance is a gray color, which most closely matches Munsell 2.5 Y 6/1.

Starting weight: 4.69 g

Component	Weight of Fraction (g)	% of Total Sample Weight	Description
Acid-soluble fraction	1.59	33.9%	Vigorous reaction at start but settled quickly. The binder was quickly consumed. There was no reaction when stirred.
Insoluble fraction	1.06	22.6%	Silt (<1/16 mm) to very fine sand (1/16-1/8 mm) size particles. White color most closely matches Munsell 5Y 8/1.
Aggregate	2.04	43.5%	White to light gray. Mostly sub-angular. The mortar mix is well-sorted, there is a range of particle sizes from very fine sand (1/16 mm) to coarse sand (<1 mm).





Figures 1, 2, 3 (clockwise from upper left): The whole sample prior to acid digestion; sample location on the west elevation; the reclaimed aggregate after acid digestion.



MDANBVC_B

This sample was collected from the Northwest corner of the theater addition and represents pointing mortar in stone masonry. The sample is reasonably hard to the touch. Not easily broken or crushed. The sample is well-sorted with a few large, black inclusions. The overall appearance is a gray color, which most closely matches Munsell 2.5Y 6/1.

Starting weight: 7.55 g

Component	Weight of Fraction (g)	% of Total Sample Weight	Description
Acid-soluble fraction	3.33	44.1%	Vigorous reaction at start, stopped after 1 minute and turned yellow immediately. Continued to react and slowly turned dark green several minutes after the acid was added. There was little reaction when stirred.
Insoluble fraction	1.11	14.7%	Silt (<1/16 mm) to very fine sand (1/16-1/8 mm) size particles. Light gray color most closely matches Munsell 2.5Y 7/1 – 2.5Y 6/1.
Aggregate	3.11	41.2%	White to light gray in color, most closely matches Munsell 5Y 8/1 – 5Y 7/1.





Figures 5, 6, 7 (clockwise from upper left): The whole sample prior to acid digestion; sample location on the Northwest corner of the theater addition; the reclaimed aggregate after acid digestion.



MDANBVC_C

This sample was collected from the east elevation, south end of the wall. The exterior color is very pale brown, which most closely matches Munsell 2.5 Y 5/1. The sample is poorly sorted, with many large black/gray inclusions.

Starting weight: 13.67 g

Component	Weight of Fraction (g)	% of Total Sample Weight	Description
Acid-soluble fraction	12.01g	87.9%	Extremely vigorous reaction at start and the reaction continued for a while after the acid was added. Slowly turned a dark green color. Little reaction when stirred.
Insoluble fraction	1.04g	7.6%	Silt (< 1/16 mm) to very fine sand (1/16-1/8 mm) size particles. Light gray color most closely matches Munsell 2.5 Y 7/1.
Aggregate	.62g	4.5%	Mostly white particles, most closely matching Munsell 10YR 8/1, with very few dark gray and tan particles. Mostly sub-angular. The mortar mix is poorly-sorted, there is a range of particle size from fine sand (1/8 mm) to medium sand (1/2 mm).





Figures 8, 9, 10 (clockwise from upper left): The whole sample prior to acid digestion; sample location on the east elevation, south end of the wall; the reclaimed aggregate after acid digestion.



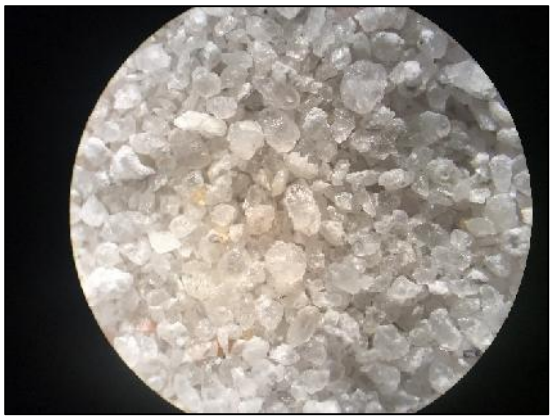
MDANBVC_D

This sample was collected from the east elevation, north end of the wall, represents pointing mortar in stone masonry. The sample is very hard to the touch. Extremely difficult to break and crush. The sample was intact upon arrival without much disaggregation. The overall appearance of the mortar reads as a gray color, which most closely matches Munsell GLEY 1 7/N, light gray.

Starting weight: 20.32 g

Component	Weight of Fraction (g)	% of Total Sample Weight	Description
Acid-soluble fraction	8.00	39.4%	Vigorous reaction at start. Binder was quickly consumed; little reaction when stirred.
Insoluble fraction	3.25	16.0%	Silt (<1/16 mm) to very fine sand (1/16-1/8 mm) size particles. White color most closely matches Munsell 5Y 8/1.
Aggregate	9.07	44.6%	White to light gray in color, most closely matching Munsell 5Y 8/1 – 5Y 7/1.







Figures 12, 13, 14 (clockwise from upper left): The whole sample prior to acid digestion; sample location on the east elevation, north end of the wall; the reclaimed aggregate after acid digestion.

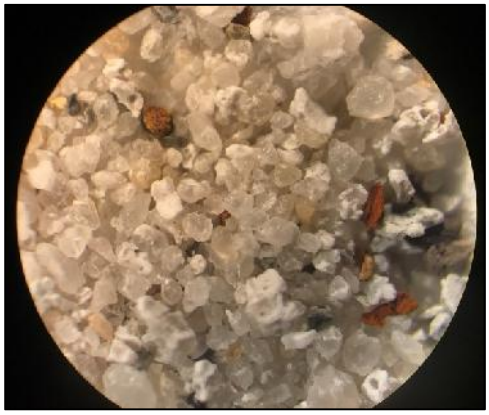
MDANBVC_E

This sample was collected from the east elevation, north wall of the trellised addition, and represents pointing mortar in stone masonry. The aggregate is poorly-sorted and ranges from fine sand to coarse sand. Inclusions of mica and brick fragments are visible. The sample is brittle and easily broken. The overall appearance of the mortar reads as greenish gray, which most closely matches Munsell GLEY 1 6/10Y.

Starting weight: 19.54 g

Component	Weight of Fraction (g)	% of Total Sample Weight	Description
Acid-soluble fraction	16.85 g	86.2%	Vigorous reaction at start and the reaction continued for minutes after the acid was added. Reaction started again when stirred.
Insoluble fraction	2.48 g	12.7%	Silt (<1/16 mm) to very fine sand (1/16-1/8 mm) size particles. Light gray color most closely matches Munsell 2.5 Y 7/1.
Aggregate	0.21 g	1.1%	White, clear, red, yellow, dark gray. Mostly rounded. The remaining aggregate is poorly-sorted. The particle size ranges from fine sand (1/8 mm) to coarse sand (<1 mm).







Figures 15, 16, 17 (clockwise from upper left): The whole sample prior to acid digestion; sample location on the east elevation, north wall of trellised addition; the reclaimed aggregate after acid digestion.

FINDINGS/DISCUSSION

Overall, there is consistency in the samples collected; this is not surprising for a structure of this size. These like qualities allow for points of comparison.

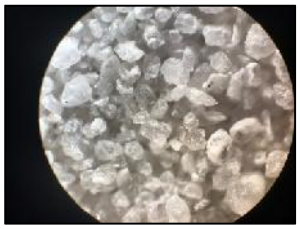
CONSTITUENT COMPONENTS

It is the conclusion of this analysis that at least two distinct mortar types can be found at the Antietam Visitor Center.

Most modern mortars are Portland cement-based. Portland cement-based mortars are characterized as relatively hard with increased cohesion when compared to lime-based mortars. During acid digestion, cement is identified as more tenacious and less susceptible to the action of the acid at dissolving this cement binder. On the other hand, lime-based mortars comparatively exhibit relative softness and poor cohesion. The rate of acid digestion with lime is rapid with vigorous consumption of the binder. The product of said reaction is a loose collection of reclaimed aggregate particles. Because of the aforementioned differing characteristics between the two mortar types, it can be concluded that at least two different mortar mixes are utilized at the Visitor Center, and that one has a higher lime content and one has a higher cement content. Two of the samples from the east elevation, MDANBVC_C and MDANBVC_E, have very high acid-soluble fraction (86-88%). In comparison, the mortars from the west elevation (MDANBVC_A, MDANBVC_B, and MDANBVC_D) have a small acid-soluble fraction (34-44%). Based on the results of the wet-chemical analysis and on-site observations, it appears that the portion of the building that dates to the 1960s contains a mortar with a high lime content and a small portion of poorly sorted, angular aggregate. The portion of the building that dates from circa 1980 contains a harder mortar, with a higher cement content and greater aggregate content.

AGGREGATE and BINDER COLOR

The reclaimed aggregate from samples A, B, and D is sub-rounded, poorly-sorted, clear quartz. All three are similar in particle size distribution.





Figures 24, 25, 26, 27 (from left to right): Samples A, B, and D.

The reclaimed aggregate from samples C and E also contains sub-rounded quartz but there are other types of aggregate of different colors included. After comparing the uncrushed samples C and E to the reclaimed aggregate, we determined that there are large pieces of aggregate that are not found in the reclaimed aggregate. We can suggest that these larger particles seen in the uncrushed samples were acid soluble, likely shells.




Figures 28, 29 (from left to right): Samples C and E.

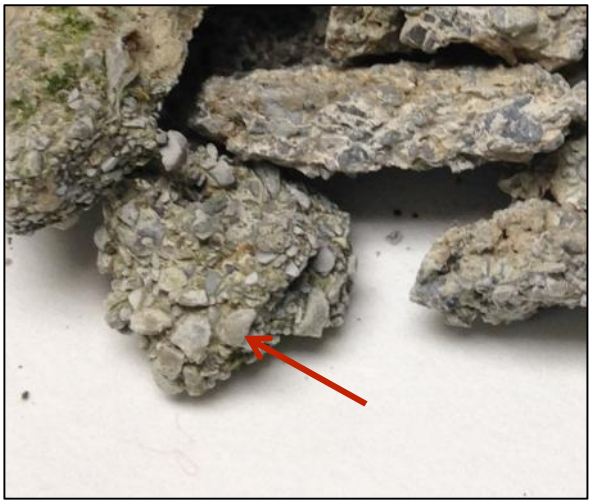



Figure 30 and 31 (from left to right): Uncrushed sample C and E.

Regardless of the mix formulation, both types of mortars are gray and white in color. Due to the consistent clear color of the quartz aggregate found in samples A, B, and D, we can determine that pigment was added to the mortar mixtures of these samples to achieve a light gray color. We are unable to determine if pigment was added to the mortar mixes of samples C and E due to the small amount of reclaimed aggregate.

MIX RATIOS

Evaluation of the mix ratios is predicated on the premise that the acid soluble component represents the binder portion; the reclaimed aggregate faithfully represents the aggregate portion (assuming that the aggregate is not acid soluble); and that the

insoluble "fines" component represents a volumetrically insignificant amount of residue, pigment or similar.

Wet chemical analysis yielded similar mix ratios.

> Samples A, B and D all yielded a ratio of approximately 3-parts binder to approximately 3-parts aggregate to 1-part insoluble residue.
>
> Sample C yielded a ratio that would indicate a proportion of approximately 20-parts binder to approximately 1-part aggregate to approximately 2-parts insoluble residue.
>
> Sample E yielded a ratio that would indicate a proportion of approximately 80-parts binder to approximately 1-part aggregate to approximately 12-parts insoluble residue.

As stated above, we suggested that the mortar type of samples C and E might contain acid soluble aggregate based on the characteristics of the reclaimed aggregate. The high percentage of acid soluble component in both samples also supports this determination. The acid soluble fraction does not accurately represent the binder alone, but that some of the aggregate may have been acid-soluble as well; if some of the aggregate had been digested, this would necessarily impact the ratios observed, as it pushes beyond the basic tenets of the acid digestion methodology. As such, the mix ratios observed in Samples C and E should not be used to create replacement mortars, rather they should be taken as confirmation that the aggregate in the mixes should include acid-soluble components. Carbonate-based acid-soluble aggregates include shells, coral sand, crushed limestone, or marble. No polarized light microscopy or petrography were included in this study. If the acid-soluble aggregate and binder need to be identified, polarized light microscopy and petrographic analysis should be performed on portions of the mortar samples.

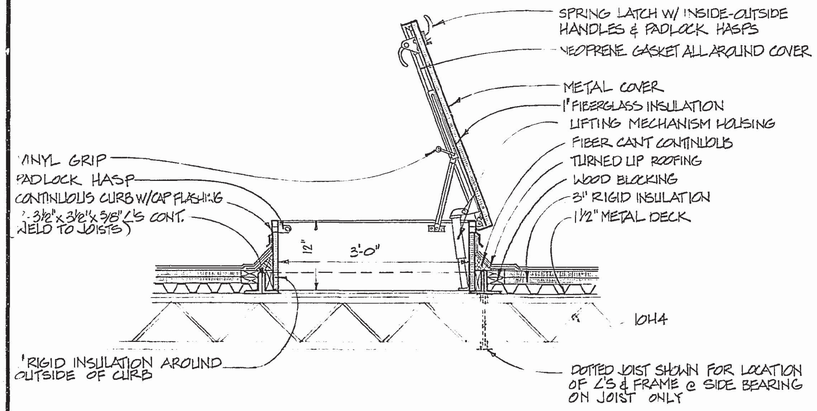
CSI has retained the aggregates for each sample, upon request they can be provided to the client or building owner to aid in the creation of replica mortar mixes.

JOINT PROFILE

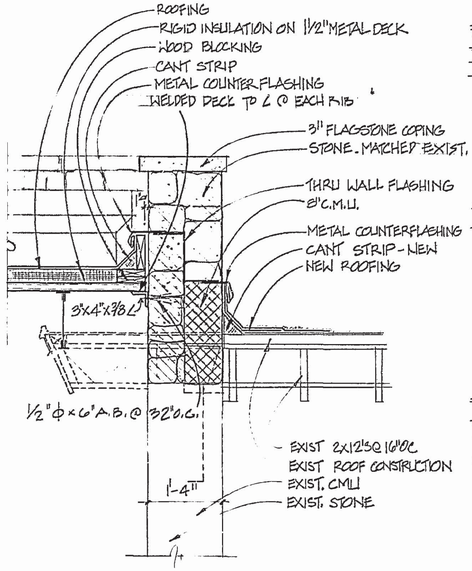
Beyond the mortar mix components, it is important to note that all of the Visitor Center mortar joints, on both the original structure and the addition, have a recessed profile. A recessed mortar joint, also known as a raked joint, is raked out to leave the edge of the stonework exposed, picking out individual stones and creating a shadow effect. In addition to the color and consistency of the mortar, the joint profile is another important and defining design characteristic.

APPENDIX A:
MORTAR SAMPLE LOCATION DIAGRAM

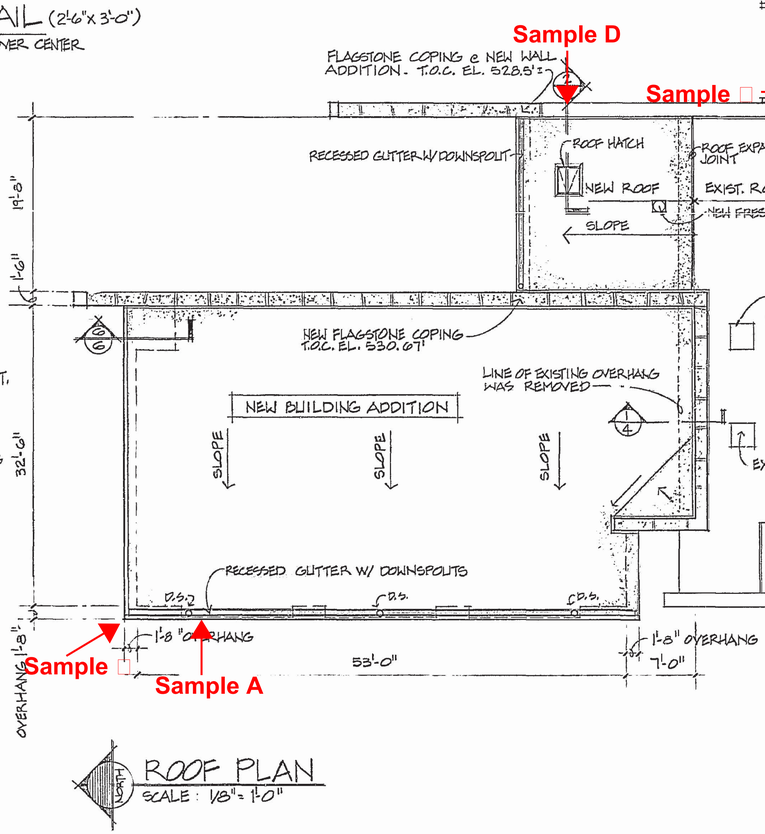
CSI Mortar Sample Locations

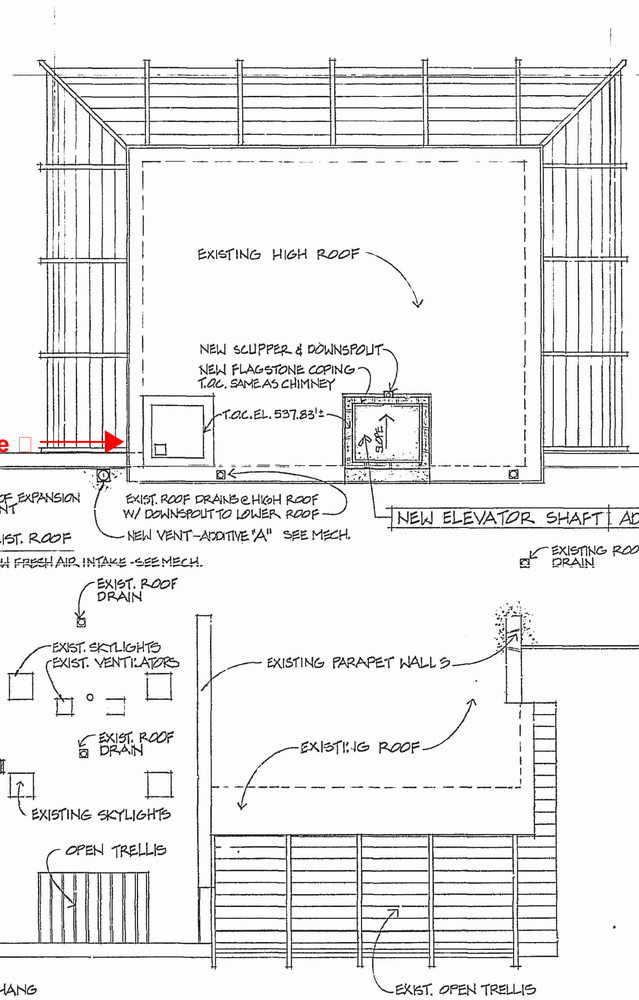


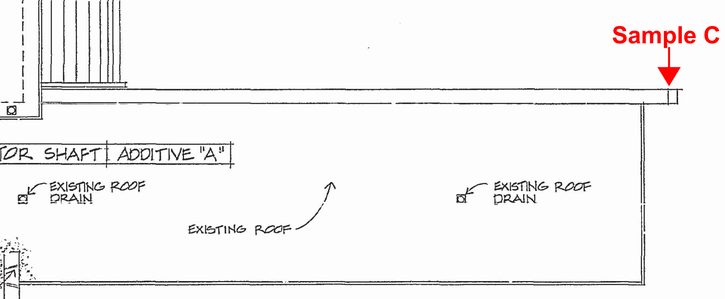
2/4 ROOF SCUTTLE DETAIL (2'-6"x 3'-0")
NOTE: ROOF SCUTTLE IS LOCATED OVER CENTER OF EXISTING WELL - SEE PLAN



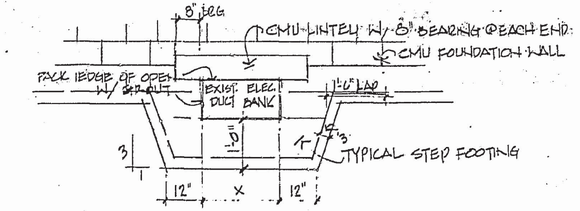
1/4 SECTION
SCALE: 3/4" = 1'-0"



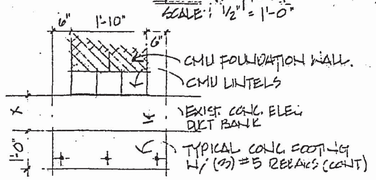




NORTH
ROOF PLAN
SCALE: 1/8" = 1'-0"



ELEVATION
SCALE: ½" = 1'-0"



SECTION
SCALE: ½" = 1'-0"

NOTE:
WHERE EXIST. CONC. ELEC. DUCT BANK INTERSECTS W/ NEW FOUNDATION WALL - PROVIDE A TYPICAL STEP FOOTING AT BOTH SIDES OF "BANK" & UNDERPIN THE "BANK" W/ THE FOOTING - PROVIDE CMU LINTELS TO CARRY WALL ABOVE.

TYPICAL DETAIL @ FOOTING & DUCT BANK INTERSECTION
SUPPLEMENTAL DWG. SPK-1-9-80 JANUARY 9, 1980

BUSHEY ASSOCIATES INC.
ARCHITECTS ENGINEERS
CONSTRUCTION MANAGEMENT
473 N. POTOMAC ST. HAGERSTOWN, MD. 21740
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BOARD OF EXAMINERS AND REGISTRATION OF ARCHITECTS STATE OF MARYLAND 3415-R

GRAPHIC SCALES
1/8" = 1'-0" 5 0 5 10 15 20 FEET
3/4" = 1'-0" 1 0 1 2 3 FEET

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
ROOF PLAN & DETAILS
LOCATION WITHIN PARK
VISITOR CENTER
NAME OF PARK
ANTIETAM NATIONAL BATTLEFIELD
NCR REGION | WASHINGTON COUNTY | MARYLAND STATE

PREPARED 'IPS
DESIGNED JR
DRAWN DEC
CHECKED 8/15/79
DATE

DRAWING NO. 302 41034B
PCIP PKG.
SHEET 4 OF 18

☆ GPO: 1977 777-359

Antietam National Battlefield
Sharpsburg, Maryland