National Park Service
U.S. Department of the Interior



SCOTTS BLUFF NATIONAL MONUMENT

Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop
Historic Structures Report

June 2017



Cover Illustration: Scotts Bluff National Monument (Anderson Hallas Architects 2015)

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Executive Summary & Administrative Data

Report Summary

This Historic Structures Report (HSR) presents a planning document for the historic buildings at Scotts Bluff National Monument in Scottsbluff, Nebraska. It identifies characteristics and features that convey the historic significance and character of the buildings and provides a plan for long term preservation and stewardship.

The intent of the HSR is to document the history, current conditions, and to recommend appropriate treatments. Presenting a comprehensive understanding of the physical evolution of the buildings, the HSR also provides guidance for their care. Documentation of historic significance and evaluation of integrity of the buildings provides the framework upon which treatment recommendations are based. All treatment recommendations follow National Register of Historic Places (NRHP or national register) guidelines.

The development of Scotts Bluff National Monument which is addressed in this report ties into government building campaigns. In 1935, the original portion of what is now called the Visitor Center was constructed using Civilian Conservation Corps (CCC) labor. A Maintenance Shop was constructed in 1935. In 1938, a major campaign built an addition on the north side of the Visitor Center, constructing a new Comfort Station (public restroom), an amphitheater, and a Ranger Residence. A second addition to the Visitor Center was constructed in 1946 to the east end. The final major building campaign was part of the Mission 66 initiative and enlarged the amphitheater adjacent to the Visitor Center, a second Ranger Residence, and an addition to the Maintenance Shop.

Common architectural characteristics and finishes were carried throughout the complex. The design character was set by the design of the Visitor Center, which is Spanish Colonial in style. In addition to setting the design style, the Visitor Center influenced the materials choices for future construction. Initially constructed of brick with a low gable roof, the Visitor Center received additions of stucco over masonry that visually integrated the original with the new. Thereafter, the majority of the complex was constructed with a painted stucco finish over various materials. Wood shingle roofing is also a unifying element to the complex.

Generally the Visitor Center, 1938 Ranger Residence, 1958 Ranger Residence, and Maintenance Shop are in fair condition on the exterior with a few areas, such as roofs in need of repair or replacement. Interior finishes are generally in good condition, with repairs required at a few locations. With the exception of select areas of the Visitor Center, the buildings are accessed only by NPS employees, not the public.

The HSR will be used as a planning tool to inform future park decisions related to Scotts Bluff National Monument and to support compliance as required by the National Historic Preservation Act (NHPA) of 1966, as amended, and by the National Environmental Policy Act (NEPA) of 1969, as amended. It will also inform decision making regarding a currently proposed addition to the Visitor Center.

The existing and general condition assessment for each element/feature are documented in Part 1. Treatment options for each element/feature of the building are documented in Part 2.

Overview of the Report

This document presents the HSR for the Visitor Center, Comfort Station, 1938 Ranger Residence, 1958 Ranger Residence, and Maintenance Shop. The NPS funded this document in 2015 to help guide park management decisions for the complex.

Project Purpose

The purpose of this project is to document building development, evaluate how the structures are used today and recommend changes if needed. Additionally, current conditions are analyzed and treatment recommendations provided for building stabilization and maintenance where indicated. A Cultural Landscape Report (CLR) and Environmental Assessment (EA) were written in conjunction with this HSR to provide a full understanding of the area, and should be referenced for further guidance.

Project Need

This HSR documents the existing building layout and development. It also records existing building condition. Deficiencies noted include the failing roofing on the 1938 Ranger Residence and 1958 Ranger Residence. Universal access, both to the buildings and through the interiors, is lacking and options to address these issues are presented in this report.

Treatments are needed to preserve these historically significant buildings and ensure they are safe and accessible to the public.

Project Objectives

The HSR identifies building and design features that convey the historical significance and character of the buildings, and provides a plan for long-term preservation and stewardship. This report addresses the following objectives:

- Present the building chronology
- Document existing buildings
- Identify building system deficiencies
- Provide corrective treatment recommendations to stabilize and repair the buildings

Scope of the Historic Structure Report

The HSR is the primary document used to guide management and stewardship of these buildings and to inform treatment and maintenance recommendations. Treatment recommendations provide guidance for:

1. This section to be written after Treatments are developed.

The HSR provides a plan that addresses operational needs while also recognizing that the mission of the NPS is to provide a rich and authentic visitor experience for all, and to ensure that long-term preservation and stewardship objectives are met to the maximum extent practicable.

Existing conditions are evaluated and elements are assigned a condition rating of good, fair, or poor to inform the treatment alternatives.

Methodology

History Methodology

The primary goals of the history section are to provide accurate information regarding the historic context and to clarify the evolution of the buildings. General research methods include a review of existing literature, interviews with current and previous employees, and on-site inspection. A number of documents related to the history of the site

were located and reviewed. Principal sources for the report's historic documentation include the 2002 Visitor Center 100% HSR, National Register Nomination forms, and historic photos. History contained in this report provides a general overview of the area's history for context and then focuses on the subject buildings.

Research, coupled with on-site investigations, verified the accuracy of previous documentation and uncovered new information.

Historic Structure Report Methodology

The HSR presents documentary, graphic, and physical information for the Visitor Center, 1938 Residence, 1958 Residence, and Maintenance Shop. Primary historic documents (original drawings, historic photographs, historic maps, and other historic documentation), rehabilitation/ restoration drawings, park maintenance records, material testing, and site investigations were analyzed to compile the record of the structure's development, historic alterations, and current condition. The assessment process utilized a multidisciplinary approach to more fully understand each building and its alterations. Disciplines included architectural, electrical, and structural experts. A separate CLR was produced in conjunction with this HSR and addresses the site development and features.

Significant dates or periods of construction were established to document features and to determine the relative significance of each feature to the buildings.

Existing Condition

A brief physical description of each building precedes a description of the individual building features and includes information such as massing, form, orientation, materiality, and general plan layout. Field observations contributed to descriptions of each extant feature and attendant condition rating. Features observed by discipline include the following as applicable by building:

Architecture: roofing, chimneys, exterior walls, exterior trim, windows, doors, wall finishes, ceiling finishes, interior trim, flooring, stairs, code/life safety, and accessibility.

Structure: foundation, floor framing, roof framing, ceiling framing, wall framing, lateral system, and load requirements.

Mechanical Systems: plumbing systems, HVAC, and fire protection systems.

Electrical Systems: fire alarm, electrical distribution, lighting, security system, and lightning protection.

Condition Assessment

Each feature was evaluated and assigned a condition rating. A general building condition assessment is presented first, followed by the condition assessment and ratings of each feature or component.

A list of the contributing features — those characteristics that embody the structure's special and notable qualities — follow the description of physical features. Mass and form, exterior materials, openings, and interior materials are included.

Treatment Alternatives

In Part 2 the treatment alternatives and associated impacts are discussed.

Purpose and Significance of Scotts Bluff National Monument

When it was originally created, Scotts Bluff National Monument offered few visitor amenities. As part of the CCC work, buildings were constructed to address these deficiencies. However, due to funding the CCC buildings were built in a series of projects. In later years, Mission 66 work in the park expanded some of the existing buildings and constructed a second Ranger Residence.

A two room Visitor Center was constructed in 1936. It was added onto in 1938, and again in 1949. Shortly after the construction of the Visitor Center, a Maintenance Shop was constructed. Originally consisting of six bays, additional bays were added in 1958, 1971, and 1981. A Comfort Station and Ranger Residence were constructed at the same time as the first addition to the Visitor Center. A second bedroom and laundry room were added onto the 1938 Ranger Residence in 1949. In 1958, a second Ranger Residence was constructed at the west end of the maintenance yard.

The purpose, significance, and mission goals of the park, as identified in the August 2015 Foundation Document, outline how the site is managed. "The purpose of Scotts Bluff National Monument is to preserve the scenic, scientific, geologic, and historic integrity of Scotts Bluff."[1] Park resources the Foundation Document focused on included the historic trail ruts, the geologic landscape, all views of the Bluffs, the history of the Bluff, and the William Henry Jackson Collection.

Summary of Recommendations

Recommended treatments for the buildings are classified as a critical, serious or minor priority in Part 2. Recommendations range from serious code and accessibility issues to minor cosmetic issues.

Exterior finishes on all buildings require repairs to areas where materials or finishes have deteriorated. The 1938 Residence, 1958 Residence and Maintenance Shop need to be reroofed. Recommendations to address code and life safety requirements include installation of a sprinkler system in the buildings. Accessibility issues are also addressed. Structural recommended treatments for the Maintenance Building address serious issues with the roof and wall framing and lateral system. The rest of the buildings have recommend treatments for less critical structural deficiencies. For the Visitor Center, mechanical recommendations address critical plumbing issues and potential options for updated mechanical systems. Recommendations in the other buildings address critical plumbing issues, including installing pressure backflow preventers, and mechanical issues, including providing additional ventilation. Electrical recommendations ranked serious include replacing the existing infrastructure with new for all buildings and upgrading the fire alarm control panels. Other minor recommendations include relamping fixtures.

1 Scotts Bluff National Monument Foundation Document, National Park Service, August 2015, p 5.

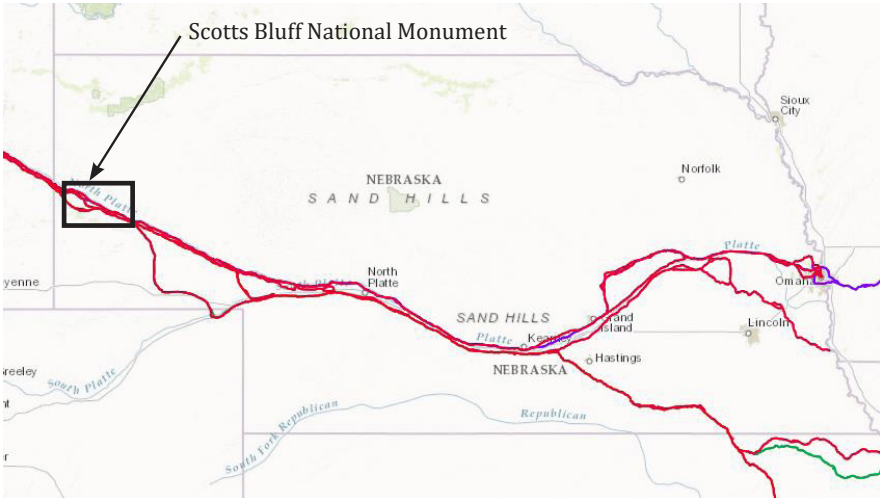


Figure 1-1. Area Map - Location of Scotts Bluff National Monument within the State of Nebraska (Source: NPS GIS server, historic trails, 10/25/2016)

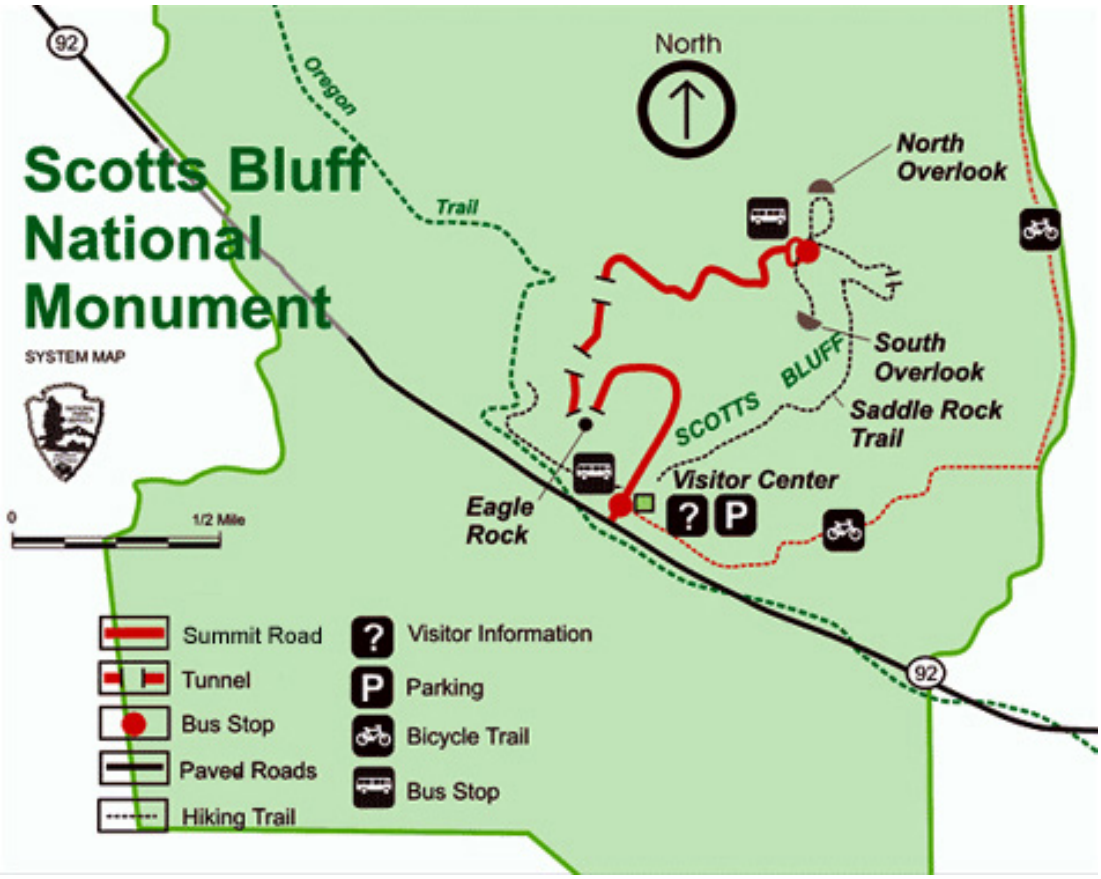


Figure 1-2. Location of Scotts Bluff National Monument, Nebraska. (Source: Scotts Bluff National Monument Map Page, 9/23/2015)

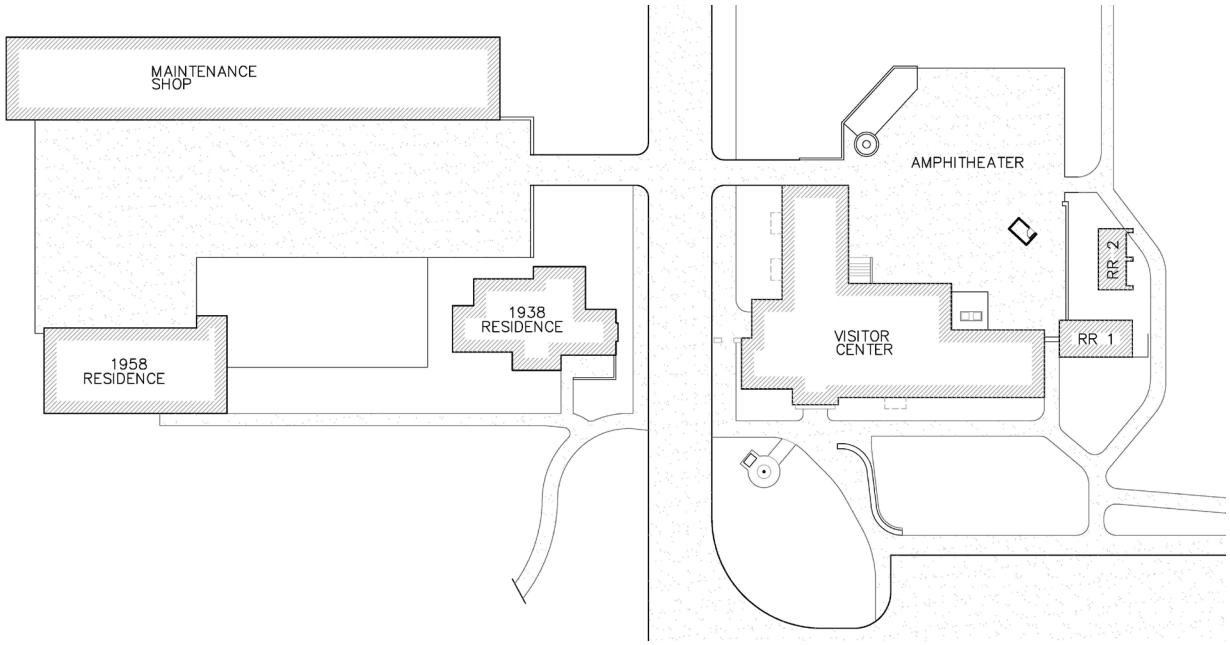


Figure 1-3. Complex Map - Location of buildings addressed in this HSR within the administrative complex at Scotts Bluff National Monument

Description of the Study Area

All buildings addressed in this report are located within Scotts Bluff National Monument. The park comprises approximately 3,000 acres in western Nebraska. The buildings are located at the entrance to the park. Parking areas adjacent to the Visitor Center allow the public to stop and walk through the public areas of the complex before driving through the park.

Location Data

Scotts Bluff National Monument is bounded by UTM References: Zone 13N, Easting 606940 and Northing 4634670; Zone 13N, Easting 609163 and Northing 4634043; Zone 13N, Easting 608905 and Northing 4629689; Zone 13N, Easting 605615 and Northing 4630346. The National Register Nomination Form includes the entire park.

Proposed Treatment

Rehabilitation is the recommended treatment approach for all four buildings. Repair and replacement is necessary and the buildings have undergone alteration since the period of significance - additions to the Maintenance Shop, interior changes to the 1938 Residence and alterations to finishes in the Visitor Center and 1958 Residence - so rehabilitation is an appropriate treatment. It also allows for altering or adding to a building to adapt to changing or continuing uses while still preserving the historic character.

Related Planning Documents

Management Policies 2006
NPS Management Policies 2006 provide guidance for all management decisions, including decisions related to cultural resources. Cultural resources, including historic structures, are addressed in section 5.0, which states that the NPS cultural resources management program involves "...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."
In addition to NPS Management Policies 2006, the following park-specific documents provided information on park resources and management strategies and priorities.

Foundation Document (NPS 2015)
The Foundation Document identifies the park's purpose, significance, important resources, and interpretive themes. It also identifies planning issues and necessary studies for future planning. The document provides direction for planning activities and establishes a baseline from which future planning can be developed.

General Management Plan (NPS 1998)
The General Management Plan provides strategies that guide the use, management and development of the park. It divides the park into different areas of visitor interaction. In the preferred alternative, the administrative facilities would be relocated to new, larger buildings in Gering or Scottsbluff. Once these functions have been relocated, the CCC structures would be used as interpretive space that offer more interpretation of the Overland Trails as well was the CCC buildings. It emphasizes that the CCC structures should be actively used, just for new functions.

Recommendations for Further Research

The following future studies would be helpful to further inform park staff on the management of the site:

- Limited destructive investigation in the Visitor Center exhibit rooms to determine if the original windows are intact and simply boarded over or if the sash were removed.
- Additional historic photo search through archives.

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Part 1: Developmental History

Introduction

Scotts Bluff National Monument was created because of its historical significance related to the Oregon/California/Mormon and Pony Express Trails passing through the area, as well as the natural landforms of the area.

The park encompasses the natural landforms, historic wagon ruts and several buildings constructed by the NPS early in the park's history. These buildings and their historic additions were constructed as part of the CCC and Mission 66 government building initiatives.

The following provides contextual information on the events that contribute to the area's history and an understanding of the site's development. A more detailed history of the surrounding area and site is contained in the CLR written in conjunction with this HSR.

Historical Background and Context

Area History

North Platte River runs through western Nebraska and is bordered by a long ridge of bluffs which form the North River Valley. Scotts Bluff stands apart from the rest and rises 800 feet above the valley floor, making it a landmark from pre-historic times through the present. To the south of Scotts Bluff is South Bluff and between the two is Mitchell Pass.

Between 1843 and 1849, large numbers of pioneers traveled from east to west across the United States in search of new opportunities on a trail that came to be known as the "Oregon Trail".[1] Early pioneers traveled to Oregon but the trail was later used by people traveling to California for the gold rush and to Utah to join the growing number of Mormons settling there. The Oregon Trail ran through Mitchell Pass which resulted in identifying Scotts Bluff as a key landmark for the thousands of pioneers heading west to Oregon, California, and Utah. Ruts from the Oregon Trail are visible in areas of the park and are one of the important features of the area. From 1860-1861, Pony Express riders rode through Mitchell Pass and later the transcontinental telegraph ran through the pass.[2] In 1869, the transcontinental railroad was completed which lead to the beginning of the decline of pioneers traveling through Mitchell Pass.[3]

Open range cattle ranching flourished in the west in the 1870s and 1880s and changed how the area around Scotts Bluff was used. Local traffic still used the Oregon Trail but as

1 Cockrell, Ron. "Scotts Bluff National Monument, Nebraska: An Administrative History, 1960-1963" November 1983, Chapter 1..
2 Ibid, Chapter 1.
3 Arbogast, David. 1976 National Register Nomination Form., Item 8, page 2.

land use shifted to homesteading in the 1880s and towns were developed, the trail fell out of use as a means of transcontinental travel.[4] Scotts Bluff and the remaining evidence of the Oregon Trail became symbols of the past and gained attention from many local and state groups. Due to the lobbying of these interested parties, Scotts Bluff National Monument was created on December 12, 1919.[5] At that time, President Woodrow Wilson designated 2,053 acres for the park which was reduced to 1393.83 acres in 1924 by President Calvin Coolidge. The boundaries were expanded in 1932 by President Herbert Hoover and again in 1940 by President Franklin D. Roosevelt to include grass lands on the east and north sides of the park. In 1961, the final boundary change was made when Congress passed Public Law 87-68 which removed land deemed nonessential and added land deemed important to the integrity of the site.[6]

Chronology of Development and Use

Complex Development

When the monument was originally created in 1919, it offered few visitor amenities. In 1935, a visitor center designed by Howard Baker, a National Park Service landscape architect, was constructed using CCC labor. It was a small, two room brick structure consisting of a lobby and museum area and designed in the Spanish Colonial style. Shortly after this construction was completed, the Maintenance Shop and adjacent yard were constructed using adobe brick to construct the walls. In 1937, a second building campaign built an addition to the north end of the Visitor Center. Additionally, a Comfort Station was built to the east of the Visitor Center and a Ranger's Residence was constructed across Summit Road to the west. This building campaign used adobe bricks for the walls, with steel or concrete posts and beam bonds to supplement the structure and allow for thinner walls. A stucco finish was applied over the brick and stucco at the Visitor Center to visually tie the additions together. Stucco was also applied to the exterior walls of the other structures and became part of the design character of the complex. Figure 1-4 shows the layout of the complex in 1939.

An initial master planning effort took place in 1939, see above drawing, but was revised within three years. Master plan drawings from 1942 include a proposed addition to the east end of the Visitor Center, an addition to the existing 1938 Residence, and an addition to the Maintenance Shop that would enclose the west edge of the Utility Courtyard. The Visitor Center addition was intended to house a collection of paintings by William Henry Jackson. The proposed addition to the 1938 Residence was to contain an second bedroom. The master plan also shows a new residence building west of the Utility Courtyard. Based on nomenclature on the master plan, the existing residence was used by a ranger and the second residence was intended to provide housing for a custodian.

Though shown on the 1942 Master Plan, the Jackson Addition was not constructed on the east side of the Visitor Center until 1949 (see Figure 1-5). The addition to the west of the 1938 Residence was also constructed at this time and contained a laundry room in addition to the planned second bedroom.

A final construction effort occurred at the monument in the 1950s when Mission 66 funding became available to improve

4 Cockrell, Chapter 1.
5 Arbogast, Item 8, page 2.
6 Cockrell, Chapter 1, Legislative History.

NPS facilities around the country. A 1958 planting plan shows the second residence was constructed in approximately the same area as proposed in the 1942 Master Plan (see Figure 1-6). It also shows that an addition was constructed to the east end of the Maintenance Shop, but it was substantially smaller than proposed and maintained the linear layout of the building instead of creating an "L" shape.

After the Mission 66 construction projects were completed, no further additions were constructed at the Visitor Center, 1938 Residence, or 1958 Residence. Two additions were built onto the west end of the Maintenance Shop - a one bay addition in 1971 and a four bay addition in 1981.

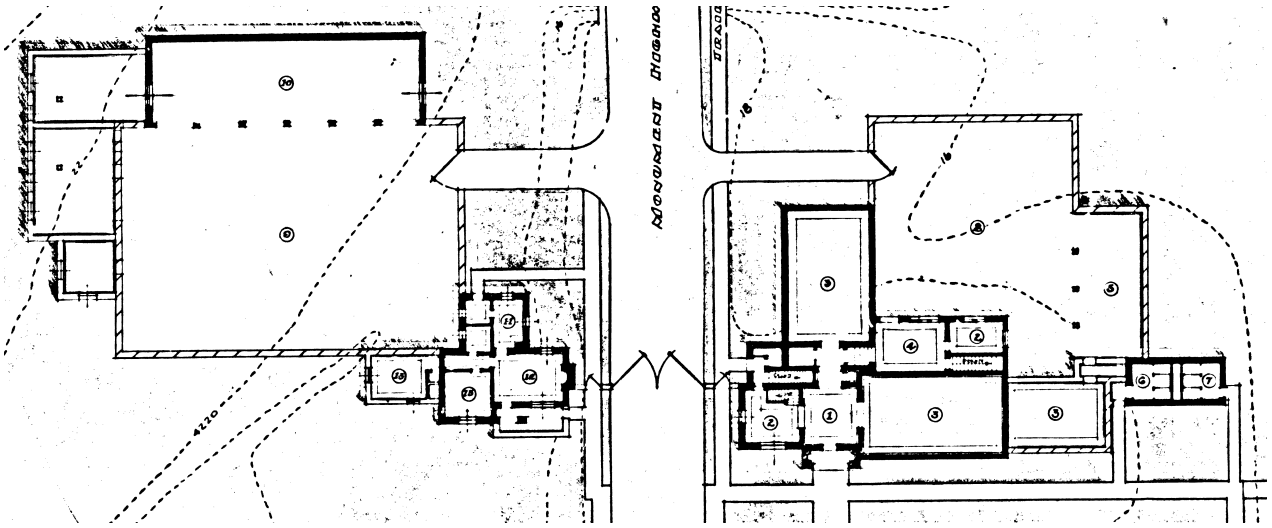


Figure 1-4.1939 Plan with poched walls showing existing Visitor Center, Comfort Station, Ranger Residence and Maintenance Shop, Proposed addition walls are not poched (SCBL collections id89758)

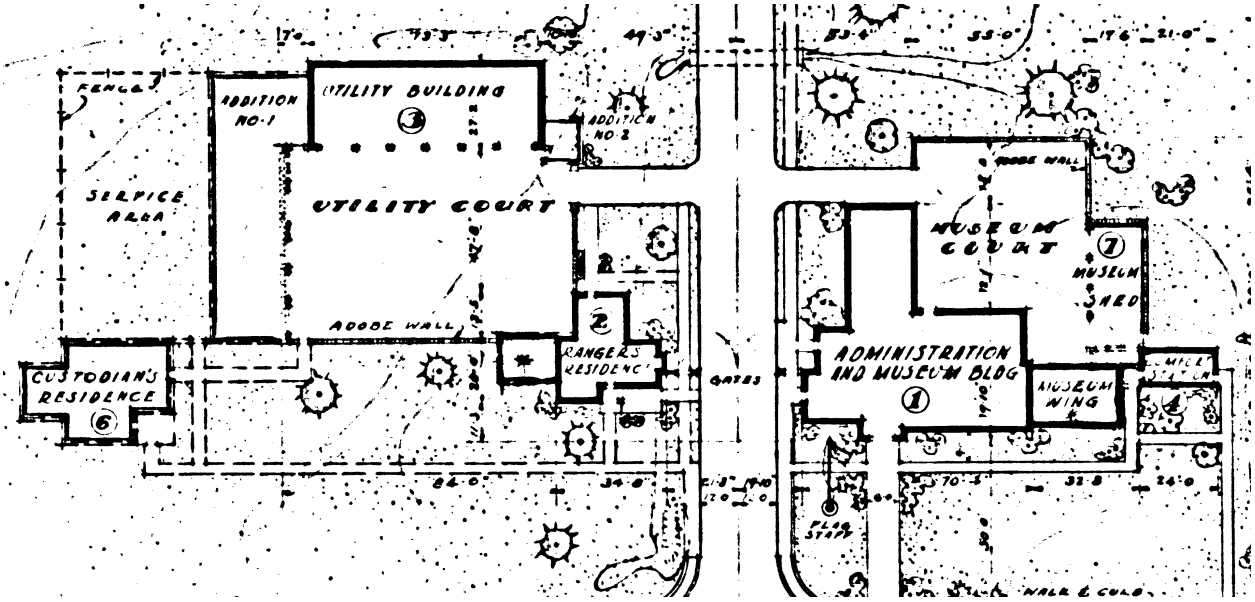


Figure 1-5. 1942 Master Plan (SCBL collections id161817)

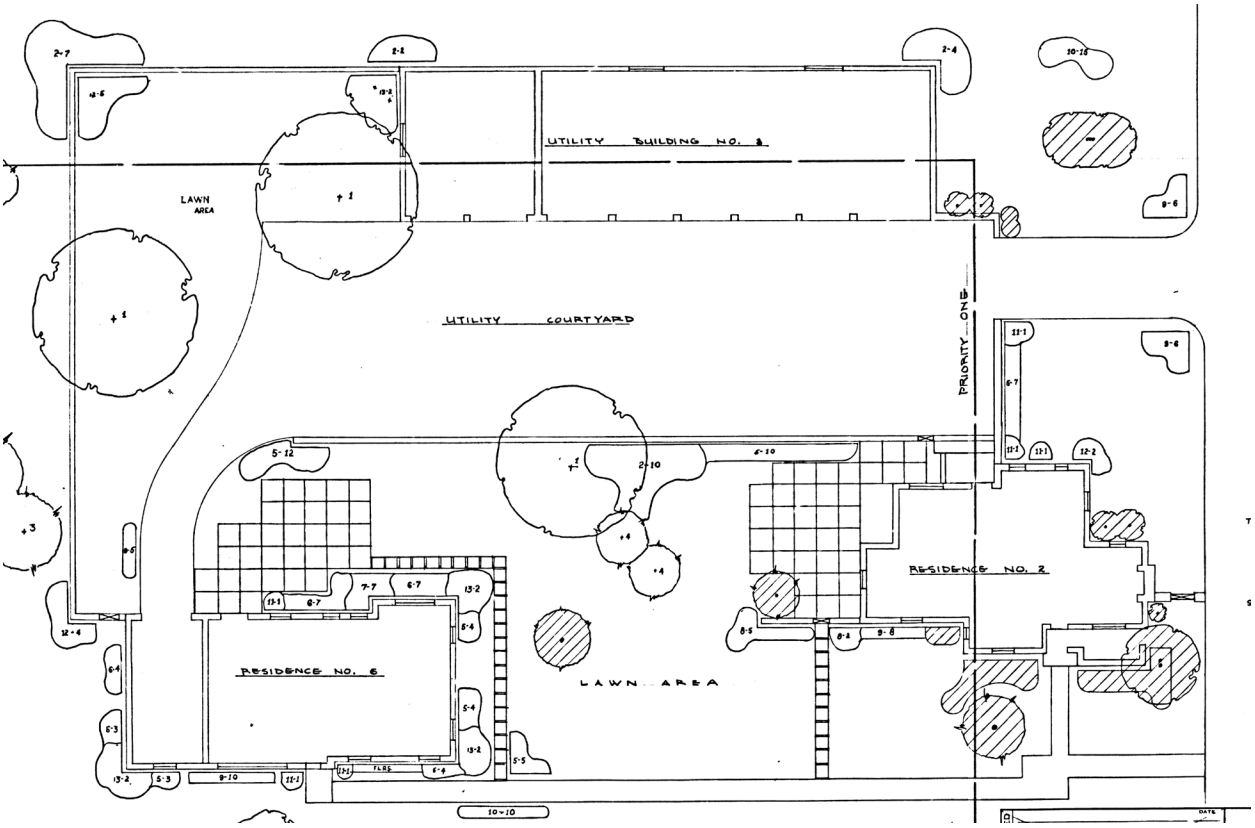


Figure 1-6. 1958 Planting Plan showing building layout (SCBL collections id152192)

1935

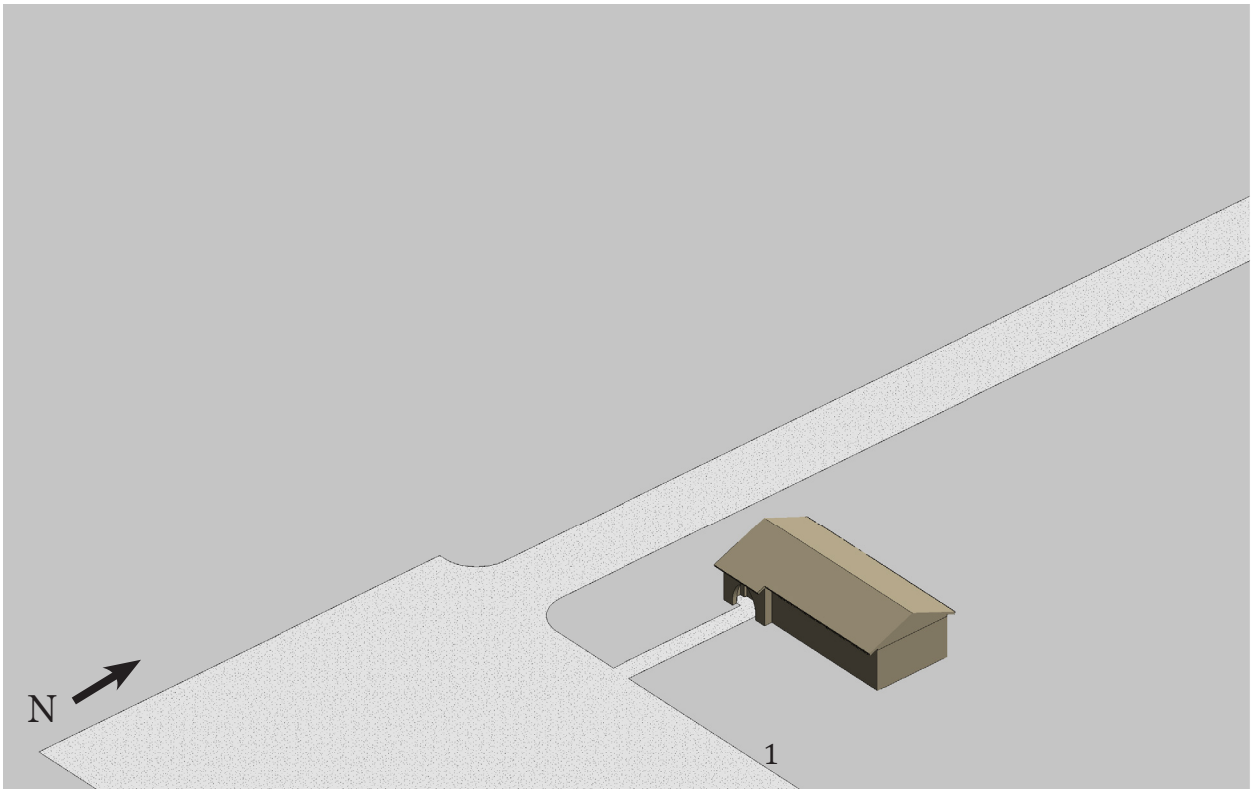


Figure 1-7. 1935 Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center

- Original construction
- Built out of fired brick
- Wood shingle roofing
- Exposed wood rafters
- Brick grilles in the windows over the museum wing

1936

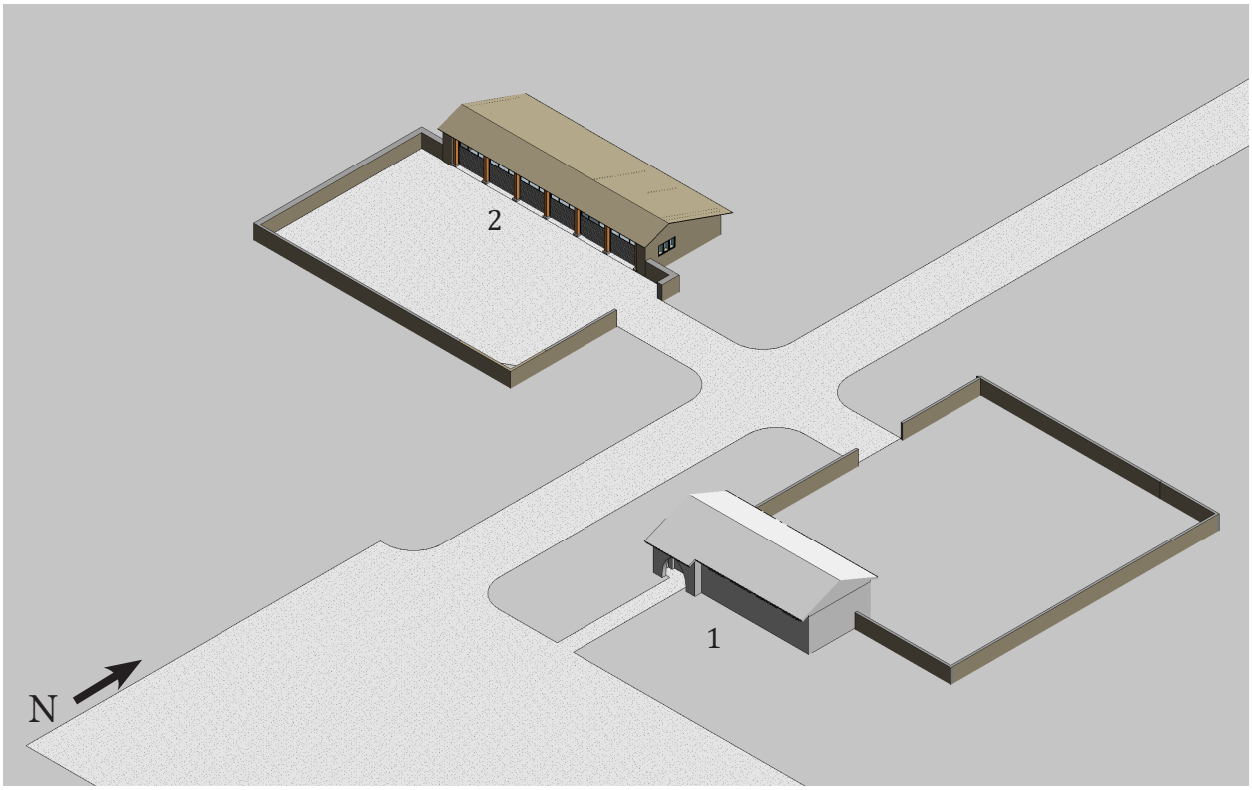


Figure 1-8. 1936 Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center
- Painted a light tan soon after construction

2 - Maintenance Shop
- Original construction
- Concrete foundation supported an adobe brick wall
- Wood shingles
- Exposed wood rafters
- Wood hopper windows
- Wood panel overhead doors with no lites

1937-1938

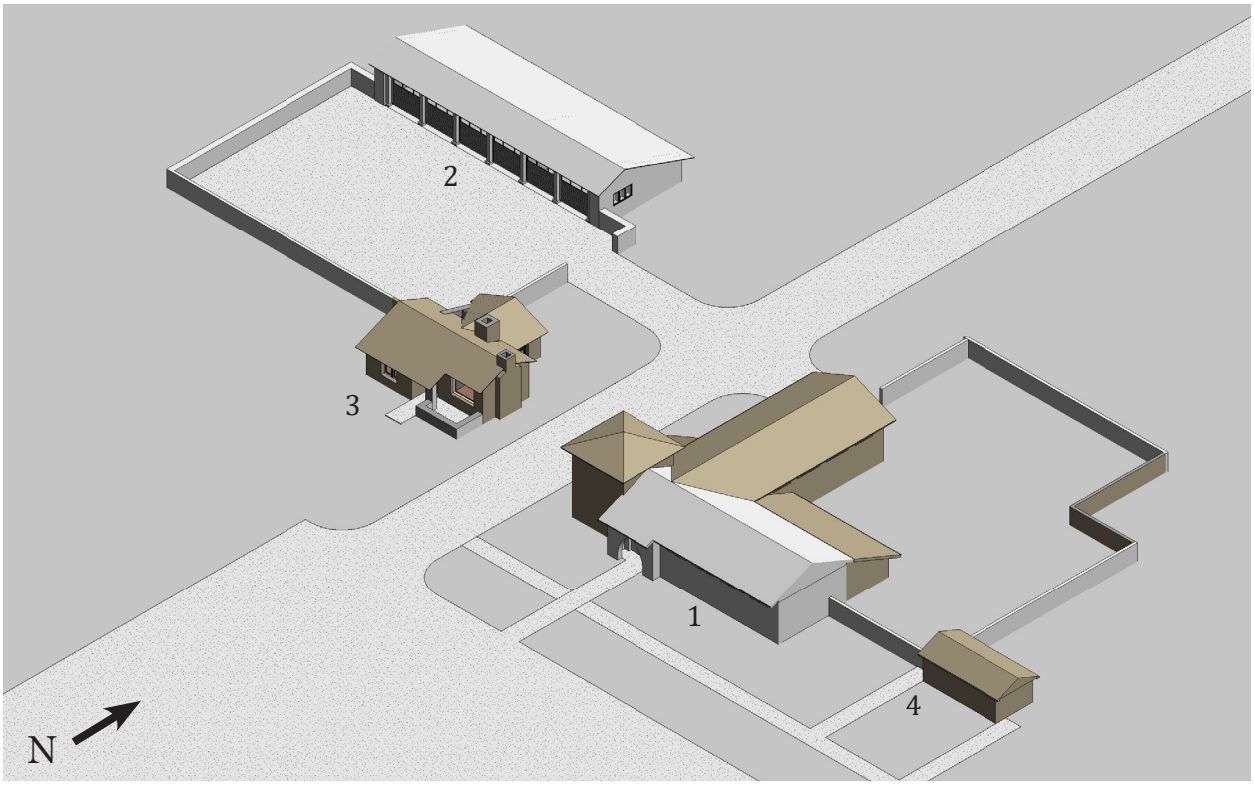


Figure 1-9. 1937-1938 Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center
- Addition constructed out of adobe to the north and west of the original building
- New adobe walls and the original brick walls were covered with stucco to create a uniform appearance for the building
- Wood shingle roofing
- Exposed rafters
- High windows on the north wing match brick screen detailing of the original building

2 - Maintenance Shop
- Stucco was possibly applied to this building at the same time as the Visitor Center. 1935 photos show adobe bricks and by 1949 the photos show a stucco a finish.

3 - 1938 Ranger Residence
- Original construction
- Adobe brick building with a stucco finish
- Wood shingle roofing
- Exposed rafters
- Front porch with a low stucco wall enclosure
- Wood windows and exterior doors

4 - Comfort Station
- Original construction
- Adobe brick building
- Wood shingles
- Exposed rafters
- Wood windows

1949

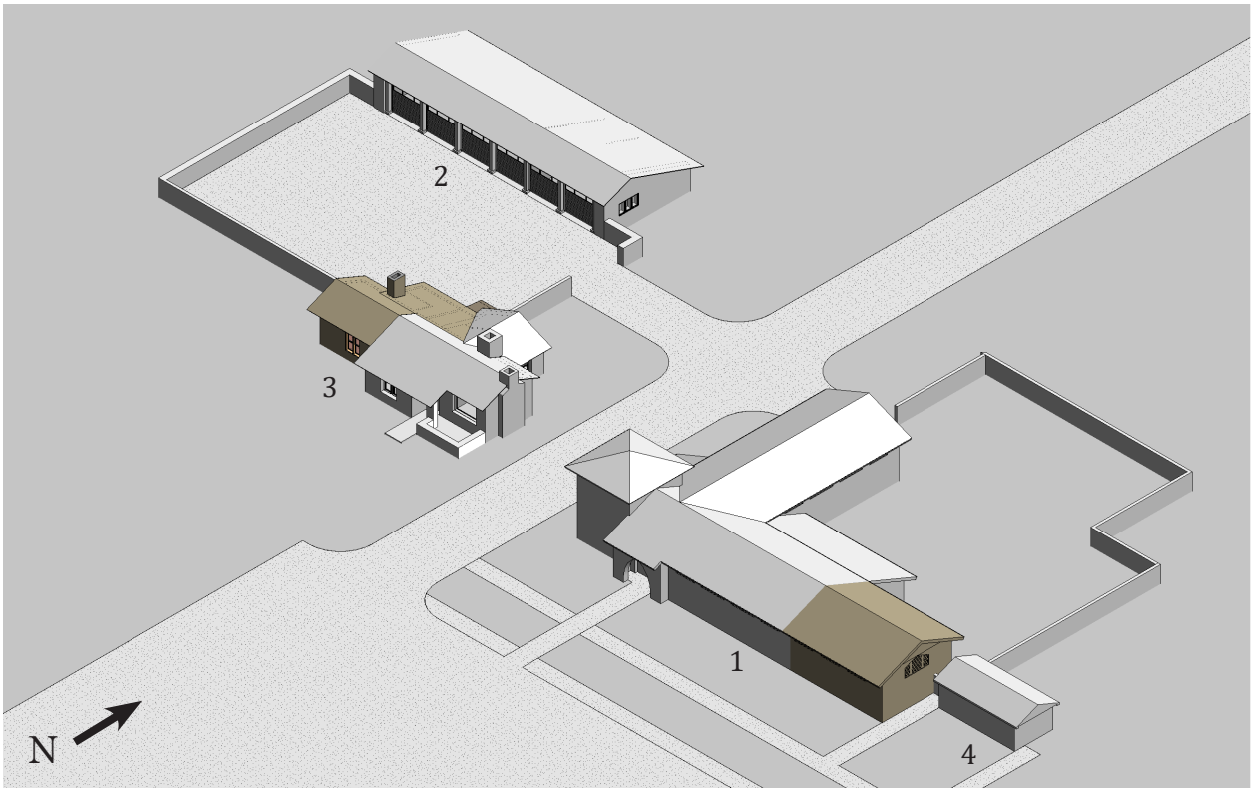


Figure 1-10. 1949 Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center
- Addition constructed to the east of the original building
- Brick construction painted the same color as the stucco on the original building and previous addition
- Wood shingle roofing
- Exposed rafters
- High windows on the north wing match brick screen detailing of the original building

2 - Maintenance Shop
- No changes

3 - 1938 Ranger Residence
- Addition constructed to the west of the original building
- CMU construction with a stucco finish to match the original building
- Wood shingle roofing
- Exposed rafters

4 - Comfort Station
- Stucco installed over the adobe bricks in 1950

1958

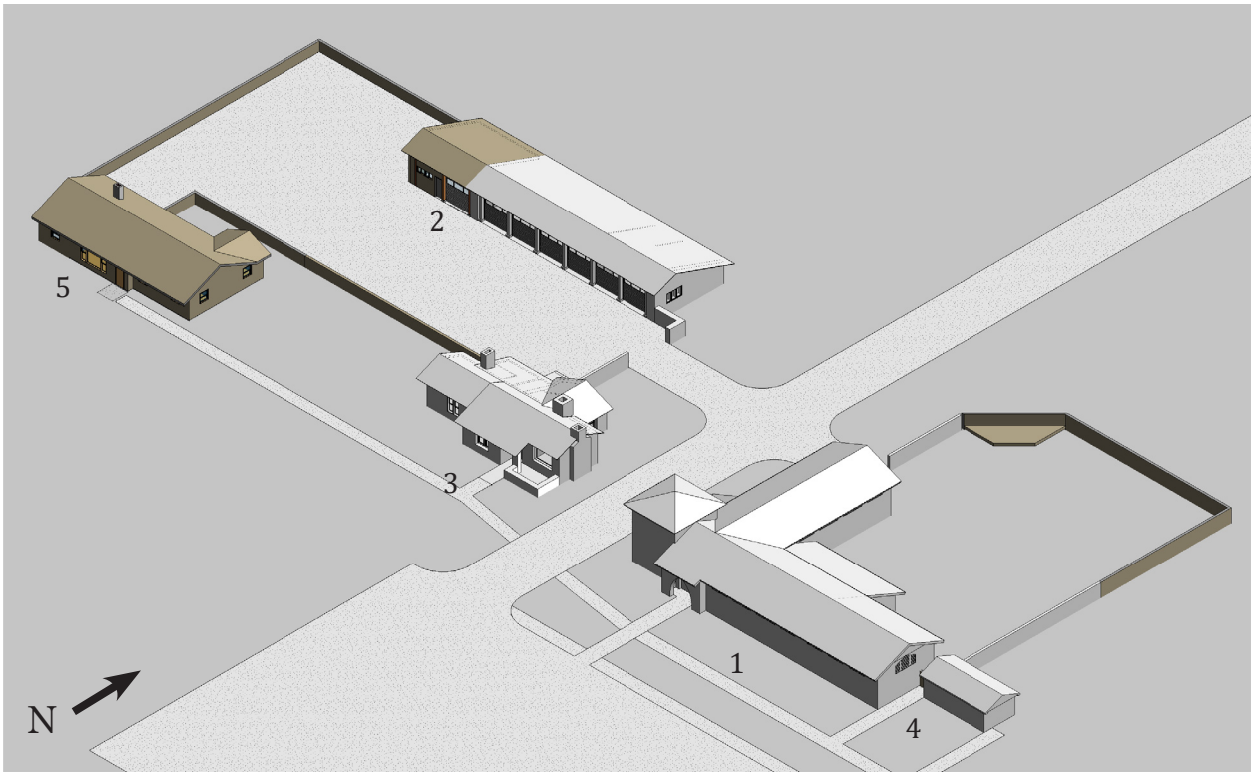


Figure 1-11. 1958 Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center
- No change

2 - Maintenance Shop
- 2 new bays constructed on the west end of the original building
- CMU construction with a stucco finish
- Wood shingle roofing to match the original
- New wood, overhead doors with three lites installed in all bays

3 - 1938 Ranger Residence
- No change

4 - Comfort Station
- No change

5 - 1958 Ranger Residence
- Original construction
- Wood frame building with a stucco finish in keeping with the design character of the other buildings
- Wood shingle roofing
- Exposed rafters
- Wood windows
- Chicago style window on the south elevation - big central window flanked by operable windows - characteristic of Mission 66 design style

1971

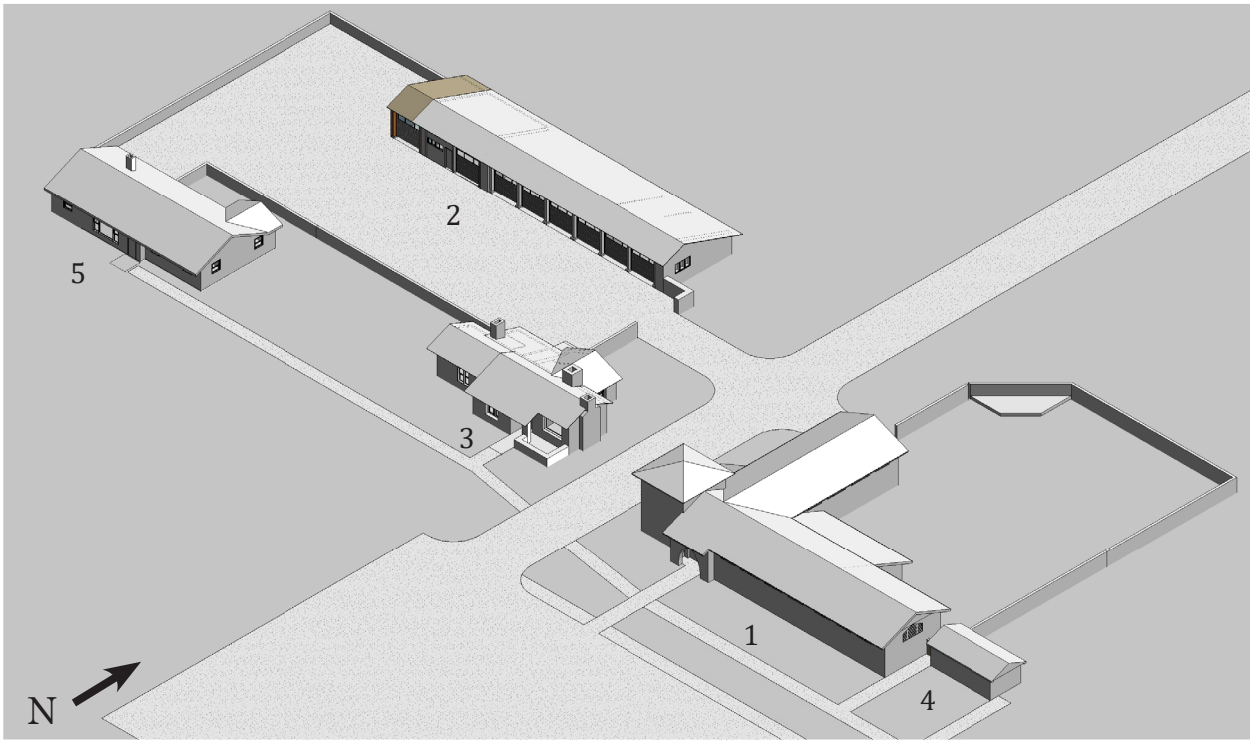


Figure 1-12. 1971 Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center
- No change

2 - Maintenance Shop
- 1 bay addition constructed on the west end of the 1958 addition
- CMU walls with a stucco finish to match existing building
- Wood shingle roofing to match existing building
- Exposed rafters to match existing building

3 - 1938 Ranger Residence
- No change

4 - Comfort Station
- No change

5 - 1958 Ranger Residence
- No change

1981

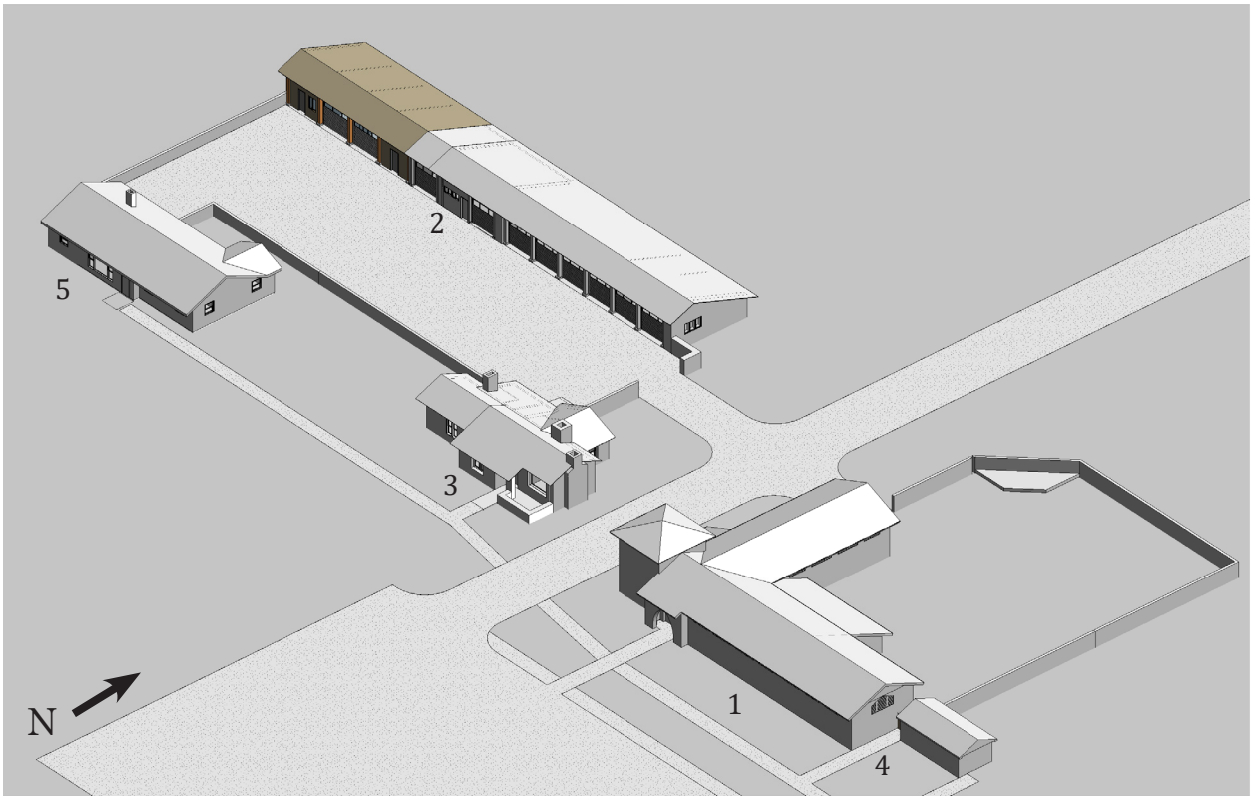


Figure 1-13. 1981 Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center
- Original windows replaced at some point in the 1970s per the 2002 100% HSR

2 - Maintenance Shop
- 4 bay addition constructed on the west end of the 1971 addition
- Concrete foundation supports wood frame walls with gypsum board finish
- Wood shingle roofing to match existing building
- Exposed rafters to match existing building
- Windows are vinyl sliders

3 - 1938 Ranger Residence
- Original windows possibly replaced at the same time as the Visitor Center

4 - Comfort Station
- No change

5 - 1958 Ranger Residence
- No change

2000s

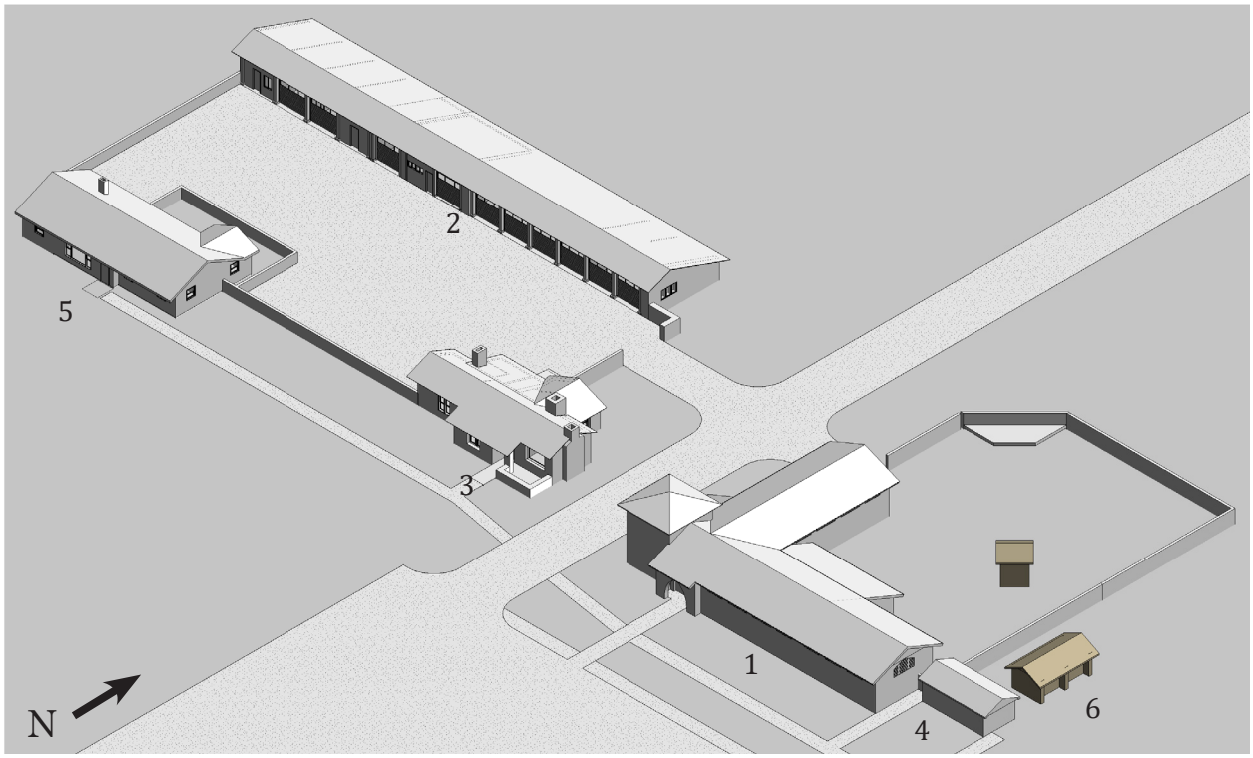


Figure 1-14. 2000s Complex Layout (Anderson Hallas, 10/28/2015)

1 - Visitor Center
- No change

2 - Maintenance Shop
- New overhead doors installed in all bays without infill walls in 2005

3 - 1938 Ranger Residence
- No change

4 - Comfort Station
- No change

5 - 1958 Ranger Residence
- No change

6 - Accessible Restroom
- Original construction in 2013

Comparative Design Examples

CCC Development

CCC workers constructed buildings in the National Parks which were designed by the park architects. Skilled craftsmen taught the CCC workers trades which resulted in well constructed buildings. Design focus of the NPS in this period emphasized that any building designed in a park should harmonize with the surrounding environment.[7] This resulted in development in parks around the country that related to the architecture in the surrounding area and yet shared similarities. The design style employed by park architects in the 1920s and 1930s came to be know as "rustic architecture" or "parkitecture."[8]

Bandelier National Monument Design

Bandelier National Monument was constructed by CCC workers who constructed thirty-one buildings including the Visitor Center, Lodge and trails between 1937-1941.9 In addition to both being constructed by CCC labor, many of the elements seen in the design of Bandelier are also seen at Scotts Bluff. Both parks have an clean design aesthetic with characteristics that carry between the visiter center, administration, service, and lodging buildings. Bandelier was designed in the Pueblo Revival style, so the form and massing differs between the two parks but both have a consistent design style that was carried throughout buildings in the park.

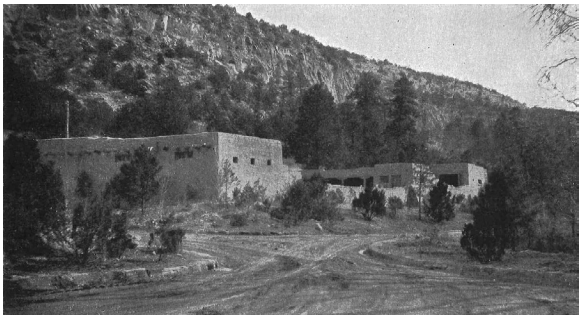


Figure 1-15. Service Group Buildings at Bandelier National Monument (*Park and Recreation Structures* by Albert H. Good, p 102)

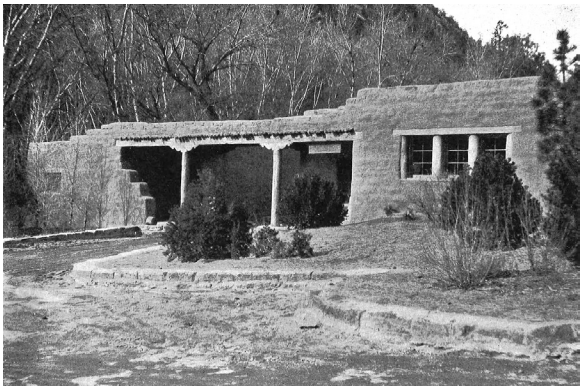


Figure 1-16. Administration Building at Bandelier National Monument (*Park and Recreation Structures* by Albert H. Good, p 61)

Bandelier features a service yard which is enclosed by a series of buildings connected by a wall, much the same as the Utility Yard at Scotts Bluff. This enclosed area provides a screen to conceal maintenance activities from the view of the public and also provides a layer of security to prevent theft from this area.[10]

7 Harrison, Laura Soulliere. Bandelier Buildings and Frijoles Canyon Lodge National Register Nomination Form, 1985, page 15.
8 Harrison, page 3.
9 United States. National Park Service. "History & Culture." National Parks Service. November 9, 2015. Accessed November 9, 2015.

10 Good, Albert H. *Park and Recreation Structures* (New York, Princeton Architectural Press, 1938), 102.

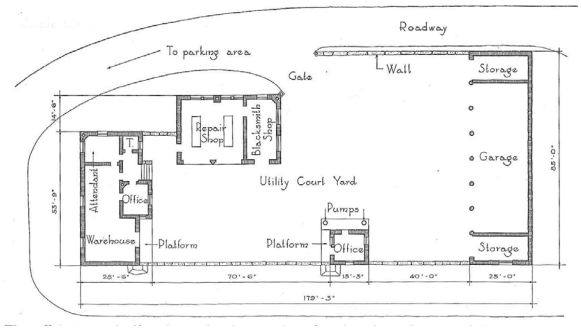


Figure 1-17. Service Group Buildings at Bandelier National Monument (*Park and Recreation Structures* by Albert H. Good, p 102)

Design Inspiration Ideas

When looking at photos of CCC constructed buildings, those constructed in the southwest and midwest areas of the country share some of the design characteristics of the buildings at Scotts Bluff and can be used as design inspiration for alterations to the Visitor Center.

The Refectory building at Lake Corpus Christi State Park was designed by Olin Boese, who was hired by the NPS, and constructed by CCC labor.[11] The building features a tower, horizontal building form, gable roofs, and local materials.



Figure 1-18. Refectory at Lake Corpus Christi State Park (*Lake Corpus Christi State Park website*)



Figure 1-19.Refectory at Lake Corpus Christi State Park (*Park and Recreation Structures* by Albert H. Good, p 83)

CCC workers constructed numerous buildings in Abilene State Park from 1933 - 1935 using local materials. Structures they built included a Concession Building, pool shelters, and pergolas.12 Design vocabulary that carries between Scotts Bluff and Abilene include the arched entry, tower element, horizontal building with a gable roof, and brick screened openings.



Figure 1-20. Concession Building at Abilene State Park in Texas (*Abilene State Park website*)

CCC workers constructed a pool with an adjacent pergola at Balmorhea. The Pergola has an emphasis on the horizontal, with

11 "Lake Corpus Christi" United States. Texas Parks and Wildlife. "The Look of Nature." Texas Parks and Wildlife Department. Accessed November 10, 2015.

12 "Abilene" United States. Texas Parks and Wildlife. "The Look of Nature." Texas Parks and Wildlife Department. Accessed November 10, 2015.

arched openings at the entries, and stone screens.



Figure 1-21. Balmorhea Poolside Pergola (*Texas Parks & Recreation "Nature by Design" website*)

Additional CCC buildings that follow the idea of horizontal massing and masonry construction can be found across the country. Two good examples were constructed at Boulder Dam State Park and Phoenix South Mountain Metropolitan Park.

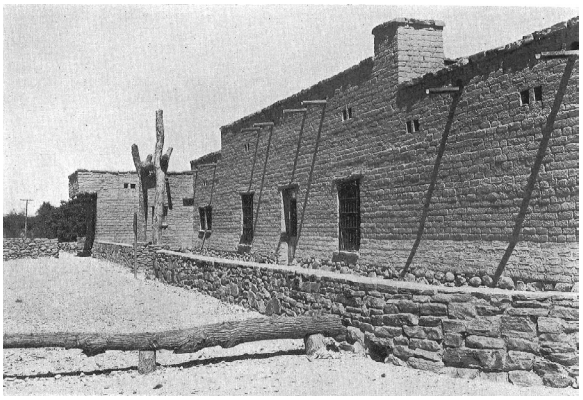


Figure 1-22.Museum at Boulder Dam State Park, Nevada (*Park and Recreation Structures* by Albert H. Good, p 182)

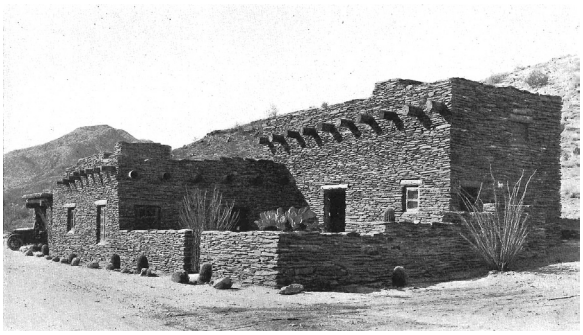


Figure 1-23. Administration Building at Phoenix South Mountain Metropolitan Park in Arizona (*Park and Recreation Structures* by Albert H. Good, p 62)

Building History

Visitor Center

Visitor Center history was written by Alan W. O'Bright for the 2002 100% HSR with minor updates and edits by Anderson Hallas.

Developmental History - Historic Photographs

The following photographs were selected from the extensive archival photographic collections at Scotts Bluff NM. The intent of these images is to demonstrate Visitor Center building development, construction methods, details of now missing elements, and appearance and character of modified interior spaces. The photos are arranged in chronological order. Other historic photographs illustrating specific elements or construction episodes are presented elsewhere in this document.

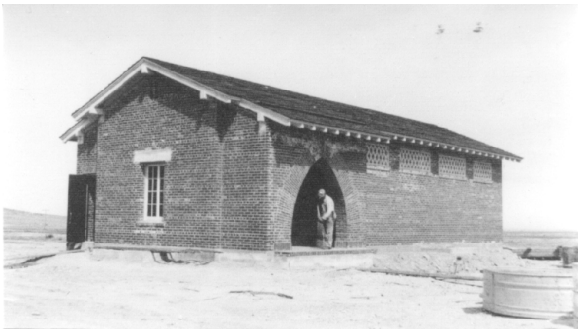


Figure 1-24. Museum - 1935-1936. This view from the southwest was apparently taken toward the end of construction. The brick walls are unpainted. (SCBL photo archive, No. 69).

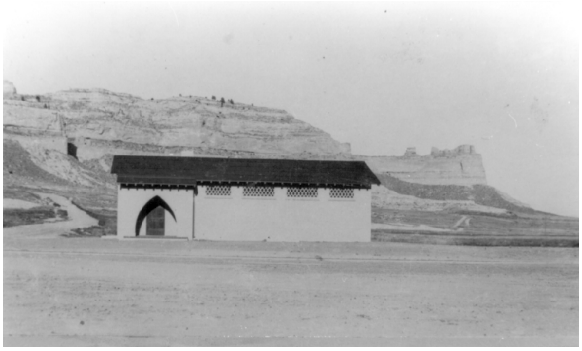


Figure 1-25. Museum Building, about 1935. In this view directly to the north, the structure appears to have been painted soon after construction. (SCBL photo archive, Drawer 2, No. sb2427).



Figure 1-26. Museum Building Exhibits. Interior view of Room 102 to the east. Note the exposed timber trusses at the ceiling and the curtained windows that are presently blocked. At the very end of the room is a pair of dioramas that now reside in the Jackson Room. (SCBL photo archives, Drawer 2).



Figure 1-27. Museum Building Addition Construction, 1937. In this view to the northwest from the interior of the Landmark Room (110), CCC workers are seen erecting an internal wooden frame of the west wall. Adobe bricks would later be laid up against the frame at the exterior. (SCBL photo archives, Drawer 2, No. sb1145).



Figure 1-28. Museum Building Addition Construction, 1937. View to the northeast toward tower framework. Concrete posts rather than adobe brick provide structural support of the tower. Later, adobe will be infilled between the posts. (SCBL photo archives, Drawer 2, No. sb1131).



Figure 1-29. Museum Building Addition Construction, 1937. View to the east toward the Landmark Room. The tall concrete posts serve to support a concrete bond beam supporting the roof. In this image CCC workers are laying up the adobe brick. (SCBL photo archives, Drawer 2, No. sb242).



Figure 1-30. Museum Building Addition Construction, 1937. View to the northeast toward tower and Landmark Room. In this view adobe bricks are completed to the window sill level at the Landmark Room west elevation. (SCBL photo archives, Drawer 2, No. 1082).



Figure 1-31. Museum Building Addition Construction, 1937. View to the northeast toward the tower and Landmark Room. In this view adobe bricks are installed nearly to the second floor level of the tower, and window lintels have been installed. (SCBL photo archives, Drawer 2, No. sb1074).



Figure 1-32. Museum Building Addition Construction, 1937. View to the east of tower and west entrance area. (SCBL photo archives, Drawer 2, No. sb1155).



Figure 1-33. Museum Building Addition Construction, 1937. View to the southeast. In this view Landmark Room and tower walls are completed, and the Landmark Room roof is under construction. (SCBL photo archives, Drawer 2, No. sb573).



Figure 1-34. Museum Building Addition Construction, 1937. View of the office wing (rooms 111 & 112) to the southwest. Here the CCC construction crew is placing the concrete foundations. (SCBL photo archives, Drawer 2, No. sb1130).



Figure 1-35. Museum Building Addition Construction, 1937. View of the office wing (rooms 111 & 112) toward the southwest. In this view construction of the adobe walls is nearly complete, and window frames have been installed. Reinforcing rod or bolts protruding from the wall top between windows and addition corners indicates that concrete posts were installed in these walls prior to adobe installation. The grilled windows of the Museum Room north elevation were permanently concealed when this addition was constructed. (SCBL photo archives, Drawer 2, No. sb1154).

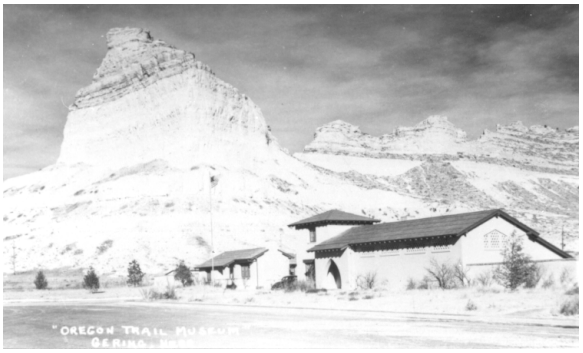


Figure 1-36. "Oregon Trail Museum, Gering, Nebr." View to the northwest of Visitor Center with recently-completed tower and ranger quarters. (SCBL photo archives, No. 53).



Figure 1-37. Museum Building Lobby (101), June 1941. View toward the west wall. At the time this image was taken a small visitor contact counter and visitor sign-in stand were located against the west wall. A vertical board Dutch door with window separated the Lobby from the Ranger Office, and the floor was finished with scored concrete that emulated tile. (SCBL photo archives, Drawer 2).

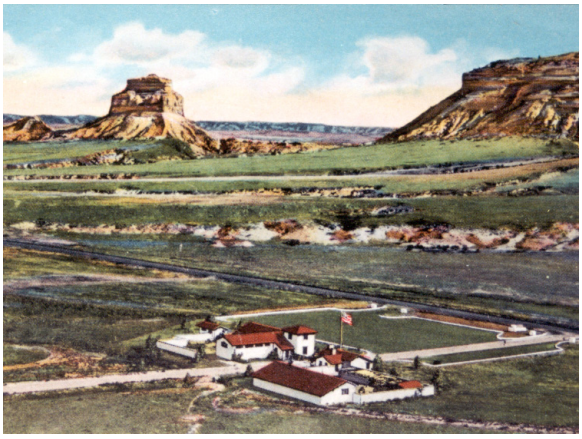


Figure 1-38. Colorized postcard view of the visitor center complex from Scotts Bluff to the southeast, circa 1941. Except for the Jackson Wing addition, the ranger quarters at the southwest corner of the complex, and construction of a free-form parking lot east of the Visitor Center, the view remains relatively the same today. (SCBL photo archives).



Figure 1-39. Administration and Museum Building, May, 1949. View to the north immediately after completion of the Jackson Wing. (SCBL photo archives, Drawer 1, No. sb3134).



Figure 1-40. Administration and Museum Building, May 22, 1949. View to the northeast immediately after completion of the Jackson Wing. (SCBL photo archives, Drawer 1, No. sb3215).



Figure 1-41. Administration and Museum Buildings, September 26, 1949. View to the southeast of the Landmark Room and tower. Note the pedestrian gate just outside of the west entrance. (SCBL photo archives, Drawer 1, No. sb3126).

Administrative Background

Constructed in 1935, the visitor center was initially referred to as the Administration and Museum Building until 1956 when it was formally renamed the Visitor Center. The building has always functioned to provide visitor services including site information, museum and special exhibits and events, and restrooms. Over time various spaces were adapted to provide administrative offices and collections storage.

In 1975 the Visitor Center was listed in the National Park Service's List of Classified Structures (LCS) under the LCS identification number (IDLCS) 70068. In the updated 1995 LCS inventory the structure is listed as Historic Structure (HS) 2, with a revised IDLCS number of 101264.[13] The structure is entered in the site's 1978 National Register of Historic Places nomination form as a non-contributing structure.[14] A consensus in the 1995 Determination of Eligibility study recommends that the structure be included as a contributing feature of the historic district of the 1920 to 1948 period of significance.[15] As of this writing the Visitor Center remains unlisted in the National Register of Historic Places, although it is eligible for listing.

The park's 1998 General Management Plan recommends that administrative and maintenance functions be moved off site to provide additional interpretive space in those vacated buildings.[16]

Construction History

Established late in 1919, Scotts Bluff National Monument had few essential visitor services until construction of the Administration

13 National Park Service, "List of Classified Structures Single Entry Report, Oregon Trail Museum," 17 March, 1995.

14 "National Register of Historic Places Inventory – Nomination Form, Scotts Bluff National Monument," (Date entered, 3 October, 1978), Item 7, page 2. The Oregon Trail wagon wheel ruts are listed as the only significant historic feature. All other structures are listed as "non contributing."

15 Dena Sanford, "Determination of Eligibility, Scotts Bluff National Monument," (Date approved, 1995).

16 "Scotts Bluff National Monument General Management Plan," (Omaha, Nebraska: United States Department of the Interior, National Park Service, Midwest Support Office, 1998), 18.

and Museum Building in 1935 to house the Oregon Trail Museum. Designed by National Park Service landscape architect Howard Baker, and constructed by the Civilian Conservation Corps, the simple structure consisted of a visitor contact lobby and a museum room extending from the lobby to the east, and measuring twenty feet by thirty six feet.[17] A full basement housed a work room beneath the lobby and a large furnace room beneath the museum room.[18] Apparently, another wing was to have been built at the same time, but insufficient project funds delayed construction until 1938.[19] Drawings produced in 1935 reflect only construction of the lobby and History Room however.

Resembling the Spanish Colonial style or the folk sod construction predominant in nineteenth century Nebraska plains (see Comparative Analysis), the building consisted of a reinforced concrete foundation, and brick walls topped by a shallow-pitched wood shingle roof (Figures 24 and 25). From the early images it appears that the building was painted a light shade soon after construction. Windows were placed high on the museum room wall and covered on the exterior with a concrete grill. Visitors approaching from the parking lot south of the building passed through a brick segmental arch into a small foyer flanked by built-in concrete seats, before entering the lobby through the front door. The History Room ceiling featured exposed wooden trusses and the floor was bare concrete scored to simulate square tile according to the construction drawings (Figure 1-26).



Figure 1-42. Comfort Station, July, 1937. View to the northwest prior to application of a cement plaster coat over the adobe bricks. (SCBL photo archives, Drawer 3, No. sb1144).

Museum designers must have anticipated future additions to that building, as blind door openings with concrete lintels were designed and apparently constructed into the east and north walls.[20] Indeed, between 1937 and 1938 the first addition to the Museum Building was constructed under private contract, in addition to a Ranger's residence, a public restroom building, and a maintenance yard. Although not documented, the designer is suspected to have been Howard Baker. A gated road entrance from the parking lot south of the building site to the bluff was created between the ranger's residence and museum. A public restroom, or comfort station, was built east of and separate from the museum wing (Figure 42).[21]

17 Ron Cockrell, Scotts Bluff National Monument, Nebraska: An Administrative History, 1960-1983, (Omaha, Nebraska: National Park Service, Midwest Regional Office, November 1983), (hereafter cited as Cockrell, 1983 Administrative History), 26. Although Baker is the design architect cited in Cockrell's work, Baker's name curiously appears nowhere on the drawings.

18 "Administration Building & Museum, Scotts Bluff National Monument," NPS Drawing No. SB-3007, sheet 2 April, 1934. According a notation on the drawing, the building was completed on 22 June, 1935.

19 S. Serrano, Assistant Landscape Architect to Howard W. Baker, Landscape Architect, letter, 23 June, 1936.

20 "Administration Building & Museum, Scotts Bluff National Monument," NPS Drawing No. SB-3007, sheets 4 and 5, April, 1934. See south and east elevations for opening locations.

21 "Addition to Museum Building," NPS Drawing No.

All of these structures were to have been completed in 1935, but the project was delayed due to insufficient funds. Project completion as originally envisioned was in jeopardy until a revision was made in the use of a primary building material. All structures were initially designed to be constructed of fired brick as reflected in the construction drawings. But the idea was floated that if adobe was substituted as an alternate material, the entire project could be completed without securing additional funds.[22]

A discussion ensued as to how to treat the adobe surface on the addition. There was concern that the addition may appear different from the existing Museum Building because of the change in building material. The Museum Building was constructed of exposed, nominally-sized fired brick measuring roughly 2½ inches by 4 inches by 8 inches with joints to ½ inch thick. Traditional adobe brick was historically much larger, 4 inches by 9 or 12 inches by 18 inches with joints averaging 1 inch thickness.[23] Bricks used in construction of the addition and other structures at the site measure 4 inches by 8 inches by 16 inches (see Wall Systems). Discussion centered on revising the size of the adobe bricks to match the exposure of the Museum Building brick.[24] Ironically, the Museum Building was constructed of fired brick emulating an adobe-style design.

Now that the more affordable adobe was considered for the addition, ideas were developed to form adobe bricks to match the initial fired brick construction. But the proposal to employ adobe was apparently protested by local contractors unfamiliar with adobe's temperament, as the material had not been employed in western Nebraska for many years.[25]

Another alternative floated by the designers to visually tie the brick to adobe was to plaster all of the exterior walls. Historically, adobe walls were plastered, or stuccoed, with an adobe mud veneer as a sacrificial finish to protect the inner bricks from the effects of weathering. The veneer gives traditional adobe structures their soft, monolithic appearance. However, there was concern as to how adobe would adhere to the Museum Building bricks without special preparation of the brick surfaces.[26]

Work proceeded in 1937 to construct the addition and other structures in the compound with traditionally-sized adobe brick rather than fired clay brick, and cover all adobe exterior wall surfaces with a cement stucco that had the appearance of an adobe veneer.[27] With this solution the size of the adobe brick was inconsequential as all size-distinguishing masonry joints were concealed. But to unify the appearance of all adobe and masonry surfaces the entire

SB-2501-A, 16 March, 1937, sheet 1, and S. Serrano, Assistant Landscape Architect to Howard W. Baker, Landscape Architect, letter, 14 July, 1937.

22 S. Serrano, Assistant Landscape Architect to Howard W. Baker, Landscape Architect, letter, 23 June, 1936, 1, see Appendix A for full content.

23 M. R. Harrington, How to Build a California Adobe, (Los Angeles: The Ward Ritchie Press and the Southwest Museum, 1948), 12.

24 S. Serrano, Assistant Landscape Architect to Howard W. Baker, Landscape Architect, letter, 23 June, 1936, 3. This concern extend to the other structures as well.

25 S. Serrano, Assistant Landscape Architect to Howard W. Baker, Landscape Architect, letter, 23 June, 1936, 2.

26 S. Serrano, Assistant Landscape Architect to Howard W. Baker, Landscape Architect, letter, 23 June, 1936, 3. The brick surface preparation method was not specified.

27 Addition to Museum Building," NPS Drawing No. SB-2501-A, 16 March, 1937, sheet 4. A few window details indicate core walls of adobe, yet a number of other details in the drawing set still carry brick notations. Window details probably had to be revised to reflect special anchoring methods in the softer adobe.

stucco and brick exterior was painted a color matching the surrounding bluff clay.

Adobe had previously been quarried and processed at a pit located near the north boundary of the park by the CCC for construction of their camp. It is unclear if the CCC was supplying a contractor with the brick to construct the addition, which would have saved materials costs, or if the CCC was totally involved with adobe supply and building construction.

Adobe walls were strengthened with steel or cast-in-place concrete posts, and concrete bond beams in response to the tall, thin adobe walls that could not be expected to carry heavy roof loads without collapsing. The posts were placed directly between windows and at corners of the new additions (Figures 1-28, 1-29, and 1-30).[28]

The new museum addition consisted of a wing combining paleontology and geology exhibits, site custodian (superintendent) and ranger offices, workroom, and full basement beneath the wing. An adobe garden wall was constructed north and east of the building. This wall and the ell-shape of the building enclosed a large courtyard.

The new wing, closely resembling the size and detailing of the museum wing, extended north from the lobby. A hip-roofed, two-story tower added to the west side of the lobby housed the ranger office and a lookout room at the second floor (Figure 1-33). To the north of the tower a small staff restroom and basement stairwell was created. A workroom and superintendent's office were tucked in the ell created by the two wings. Since this area was protected by a continuous extension of the museum wing roof, a concession had to be made to accommodate ceiling head height in the workroom and office by lowering the floor level three feet (Figure 1-35). Sets of steps were provided between the Landmark Room and the north wall of the ell addition down into the workroom.[29] The basement beneath the Landmark Room probably only functioned as mechanical access space at this time, as the floor was exposed dirt according to the construction drawings.

The 1938 construction work necessitated removal of various portions of the 1935 structure to provide access to the new addition. A window on the lobby west wall was replaced by a door to the ranger's office, and the basement stair was relocated to create a wide doorway between the lobby and Landmark Room.

The public had no view of the western Nebraska landscape from inside the building. Access to the tower was restricted due to the placement of tower stairs within the ranger's office, and the use of the tower room as living quarters. The exterior could only be viewed from the office areas, and even then, Scotts Bluff could not be seen from most ground floor windows.

Two other constructions associated with the Museum Building were added in 1937. According to historic photos an adobe garden wall joined the east elevation. It is suspected that this was an extension of the courtyard that enclosed an area north of the Museum Building (Figure 1-43). That same year the Comfort Station, or present public restroom, was constructed (Figure 1-42). The walls and

28 Addition to Museum Building," NPS Drawing No. SB-2501-A, 16 March, 1937, sheet 2. Steel posts were placed between windows of the Landmark Room, and concrete posts elsewhere.

29 "Addition to Museum Building," NPS Drawing No. SB-2501-A, 20 February, 1937.

floor of this structure may have been built over a toilet vault.[30]

The last major building episode occurred in 1949 with funds provided by the American Pioneer Trails Association to construct a new wing to display works of early western art by William Henry Jackson.[31] Named after Jackson, the wing essentially extended the museum wing east by twenty nine feet (Figures 1-39 and 1-40). The style and detailing of the new addition rubber stamped the older museum wing except at the interior. Here structural roof trusses were concealed with a skim coat plaster ceiling trimmed with redwood cove moulding. There was no basement beneath the Jackson Wing. The concrete slab floor in the room was covered with asbestos floor tiles.[32]



Figure 1-43. Courtyard adobe garden wall under construction, June, 1937. View to the northwest toward the Museum Building. (SCBL photo archives, Drawer 3, No. sb183).

To construct the new addition, the east gable end cast concrete grill was moved from the museum wing to the new gable end of the Jackson Wing. A wide doorway centered on the museum wing gable end wall was cut through the brick to access the new addition. In addition, a portion of the adobe courtyard wall built in 1937 was demolished to make way for the Jackson Wing. New ducts were brought up at the adjoining corners of the Museum Room to heat the Jackson wing. The Jackson Wing must have been unevenly heated as there was no return air ducts and all supply air vents were concentrated at the western end of the room.

Except for utility and mechanical systems, and exhibit repair or replacement, completion of the Jackson Wing signaled the end of major construction at the Visitor Center. However, serious discussion took place in 1975, during development of the site draft Master Plan, over whether the entire administrative and visitor complex should be removed to return the landscape to its natural state. A determination was made that the present complex was serviceable until such time that "the present structures have lived beyond their normal life under appropriate

30 NPS Architect Mike Fees to Alan O'Bright, 16 June, 2000, and "Addition to Museum Building," NPS Drawing No. SB-2501-A, 20 February, 1937, Sheet 1. Vault stories were related to Fees by others in the 1980s. Although there are no construction details, the Museum Building drawings label the building as "latrine," a name more closely related with vault construction. The vault was undoubtedly abandoned when more reliable water and sewer service was installed at the site.

31 Cockrell, 1983 Administrative History, 26. A 1942 drawing shows that the wing was apparently planned well ahead of construction. (see "Headquarters Area Utilities Layout, Part of the Master Plan for Scotts Bluff National Monument," NPS Drawing No. NM-SB-4965-C, 1 January, 1942.

32 "William H. Jackson Memorial Wing Addition to the Administration Building and Museum," NPS Drawing No. NM-SB-2501-J, 16 July, 1946, sheet 1 and 2.

maintenance, to the point where expensive major rehabilitation would be necessary."[33] There is no evidence of any movement to remove the structures since that discussion.

The absence of a dedicated auditorium and cramped administrative offices were identified as Visitor Center weaknesses in the 1975 Master Plan. The recommendation to construct an addition to provide improved interpretation and relieve office crowding was recommended, but not approved by the reigning Regional Director.[34]

Since that 1975 report several modifications have been made to improve tight space at the site. The 1938 Residence, located just across Summit Road from the visitor center, was renovated for use as an administrative building to house the superintendent's and administrative officer's offices, and storage for park files. The superintendent's quarters then reverted to the 1958 Residence. Within the visitor center, first floor offices vacated by the superintendent are presently occupied by three support staff members. The basement beneath the Landmark Room was rehabilitated for use as an office, workroom, sales office and storage, and a small kitchen. Basement space beneath the Museum Wing was used as a conference room and library, seasonal locker space, and employee break room. In 2016, the majority of the functions were removed from the basement.

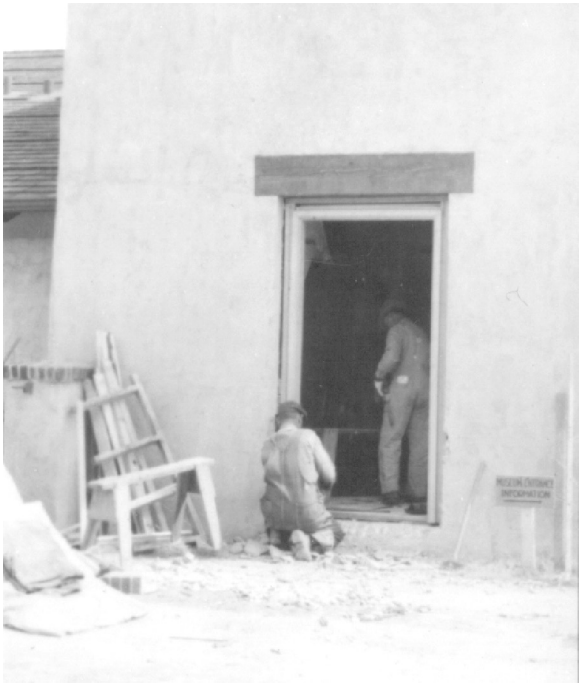


Figure 1-44. Replacement of tower west window with a door, March, 1941. This door was in turn replaced with a window in the 1970s. (SCBL photo archives, Drawer 2, No. sb1193).

Other work has played a part in the appearance, comfort level, and serviceability of the Visitor Center structure. In 1941 the west ranger office window was replaced with a door to facilitate ranger contact with autos entering and exiting the Summit Road (Figure 1-44).[35] That door was replaced by a window around the 1970s at the same time that most wooden windows were replaced with double-glazed, fixed aluminum sash.[36] Around 1957 air conditioning was first installed in the building, with condenser coils located within a fenced area just outside visitor center offices. In 1958 the amphitheater stage, fire

33 Beal to Hendrix, memo, 15 January, 1975, see Cockrell, 1983 Administrative History, 28-29, for full discussion.
34 Cockrell, 1983 Administrative History, 29.

35 Scotts Bluff NM photo files, Drawer 2, photos sb1192, sb1193 and sb1194, March 1941.
36 Park staff to Alan O'Bright, 19 April, 2000. The door was nearly impossible to operate during high winds from the west.

ring and wooden fence were constructed.[37] A sump pit and pump were constructed in the Museum Room basement in 1962.[38] In 1978 exhibit redesign within the Jackson Wing resulted in the installation of a suspended acoustical ceiling, lowering the floor-to-ceiling height from twelve to nine feet.[39] It is assumed that the same ceiling alterations occurred in the Landmark room at that time. In 1984 the site water distribution system was replaced.[40] Around 1988 a projection booth was built within the amphitheater to facilitate evening presentations.

In 1990 all heating systems at the park were converted from propane to natural gas.[41] The wood shingle roof was replaced about that same year.[42] A restroom meeting contemporary standards and codes to replace the existing public facility was designed in 1990.[43] It was constructed in 2013 and provides a men's and women's accessible restroom.

Changes and additions to the administrative complex have had an impact on use and appearance of the site. A two room addition was constructed to the ranger's quarters in 1949. In the late 1980s, this house was rehabilitated for use as park administrative offices. A second quarters was constructed at the southwest corner of the complex in 1958 as a result of the Mission 66 program.[44] Also under the Mission 66 program, the 1936 maintenance shop was expanded in 1958, then again in 1981 to accommodate additional vehicles. A vaulted metal storage building was built north of the two quarters in 1958.[45]



Figure 1-45. Maintenance yard garden wall collapse, May, 1942. View to the north toward the maintenance facility. A similar fate was met by the Museum Building courtyard walls. (SCBL photo archives, Drawer 3, No. sb1482).

Around 1942 the adobe garden walls began to collapse, probably as a result of direct exposure to weather (Figure 1-45).[46] Most of the remaining adobe walls were demolished in 1951 and later replaced with stuccoed concrete walls and a wooden fence.

A deteriorating parking lot precipitated a 1988 analysis to improve parking conditions and circulation. The three proposed design

37 Scotts Bluff NM photo files, Negative No. 2426.
38 "Installation of Air Conditioning System, Administration Building and Museum," NPS Drawing No. NM-SB-2501-M, 30 August, 1957 and "Installation of Sump Pump, Administration Building," NPS Drawing No. NM-SB-2501-N, 8 May, 1962. The reason for installation of the sump pit is not entirely understood, but may have been placed to pump out condensed water from the nearby air conditioner.
39 "Visitor Center Remodeling, Jackson Wing," NPS Drawing No. 317-41000, 1 November, 1977.
40 "Replacement of headquarters Water Distribution System, Scotts Bluff National Monument," NPS Drawing No. 317-80015, 13 June, 1984.
41 "Conversion of HVAC Systems to Natural Gas, Visitor Center," NPS Drawing No. 317-80025, 1 September, 1990.
42 NPS Architect Mike Fees to Alan O'Bright, 16 June, 2000.
43 "Proposed Restroom, Scottsbluff [sic] N.M.," NPS Drawing No. 317-80026, 19 September, 1990.
44 Cockrell, *1983 Administrative History*, 26.
45 Cockrell, *1983 Administrative History*, 27.
46 Scotts Bluff NM photo files, Drawer 3, sb1482 and sb1483.

alternatives presented kidney-shaped, free-form lots.[47] The selected design retained and improved the original rectangular lot and added a kidney-shaped lot to the immediate east of the visitor center that caters principally to buses and recreational vehicles. Unfortunately, the organic shape of the new lot and associated sidewalks conflict with the ordered, rectilinear character of the remainder of the administrative complex. While difficult to perceive from the ground, the lot is not in character with the complex when viewed from the South Overlook at the top of Scotts Bluff.



Figure 1-46. Example of frontier Nebraska sod house. Note the simple form, low-pitched roof, and few window openings. (Nebraska State Historical Society, Solomon D. Butcher Collection).

Comparative Analysis

As initially constructed in 1935 the Museum Building attained the look of folk adobe Spanish Colonial residences typical of early examples found in coastal California, but with eclectic features. One might also argue that the building had the scaled-up appearance of sod houses indigenous to late nineteenth century western Nebraska (Figure 1-46). It is unknown if landscape architect Howard Baker was influenced to design the complex based upon similar sites he experienced in the southwest, whether he was caught up in the Spanish Colonial revival style of the time, or swayed by historical ties to the humble dwellings of the early Nebraska settlers.[48]

The stylistic demeanor established on the first building was transferred to subsequent additions. These later additions forming the complex of visitor service, maintenance facility, ranger dwelling, and other support structures seem directed toward the development of a rustic style that would be one with the land. This was a prominent design ideal in the development of many state and federal park projects of the Depression era, particularly in the southwestern United States.[49] Park administrative complexes of Spanish Colonial design influence typically featured structures arranged in rectilinear fashion extending to meet a sparse landscape. Areas between buildings were enclosed with adobe or masonry garden walls to create patios and maintenance courtyards. Often, the grouping was arranged to also serve as a gateway into the park as was done at Scotts Bluff National Monument.

Yet another influence in the overall design of the Visitor Center may have been rooted in a long lost structure. Fort Mitchell was recorded as being one of many outposts

47 "Entrance and Visitor Center Parking," NPS Drawing No. 317-41005, 1 May, 1988.

48 see Roger L. Welsch, Sod Walls, The Story of the Nebraska Sod House, (Broken Bow, Nebraska: Purcells, Inc., 1968), for numerous examples from Solomon Butcher photo collection.

49 See Albert Good, Park and Recreation Structures, (Boulder, Colorado: Graybooks, 1990), and Laura Soullière, Architecture in the Parks, National Historic Landmark Theme Study, (Washington D.C.: Department of the Interior, National Park Service, 1986), for several examples of adobe structures and districts.

protecting Oregon Trail travelers. Located along the bank of the North Platte River near Scotts Bluff, Fort Mitchell was in existence only three years before abandonment by the Army. Constructed of sod in 1864, the fort quickly reverted back to the soil from which it came soon after desertion.[50] Two surviving drawings of Fort Mitchell by William Henry Jackson show striking resemblance in layout and massing in comparison with the present Visitor Center (Figure 1-47).[51] Each drawing depicts a two-story guard tower with narrow, gable roofed structures set at right angles to the tower. The buildings also served as the defendable walls of the fort. Depending upon the artist's interpretation a parade ground was enclosed by the sod structures at all quadrants, or sod structures at three sides and a single wall enclosure of log pickets. In the 1933 drawing window openings are set high on walls facing the prairie. Whether Baker knew of these drawings prior to his design work is unknown.

At present, the administrative complex at Scotts Bluff National Monument still retains the characteristic design elements established in the late 1930s. Few exterior alterations have been made since then; the most prominent being the replacement of the adobe garden walls with a wooden fencing, addition of Mission 66 quarters and maintenance buildings, and replacement of the parking lot.

Not unlike Spanish Colonial revival structures of the era, the Visitor Center features massive, monolithic-appearing adobe and brick masonry walls that have been uniformly plastered. The low-pitched roof with extended eaves is more closely situated with California adobes that received light to moderate rain not unlike that found in western Nebraska. Few, deep-set wall penetrations are also characteristic of adobe constructions.

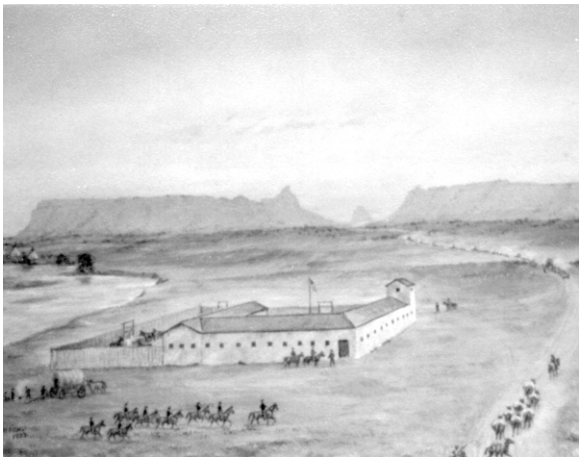


Figure 1-47. Fort Mitchell. This bird's-eye view of an early sod or adobe fort along the North Platte River is reminiscent of the park Visitor Center in lines and form. Fort Mitchell was abandoned around 1867; there are no above-ground remains. (Signed and dated by William Henry Jackson, SCBL collections, No. SCBL 28).

Eclecticism is reinforced through the use of concrete brick window grills and the segmental arched doorway. The indigenous nature was strengthened through the use of wood shingles rather than clay tile typically found on gable-roofed adobe structures in the southwest. The interior reflects contemporary use, although the exposed roof trusses in the Landmark and Museum wings are a characteristic feature of gable-roofed adobes. The open trusses were concealed

50 Dean Knudsen, An Eye For History, The Paintings of William Henry Jackson, (Gering, Nebraska: Scotts Bluff National Monument & The Oregon Trail Museum Association, 1997), 32.

51 Dean Knudsen, An Eye For History, The Paintings of William Henry Jackson, (Gering, Nebraska: Scotts Bluff National Monument & The Oregon Trail Museum Association, 1997), 32-33. Each of the original drawings are in the Scotts Bluff William Henry Jackson collection.

from view owing to 1970s renovation work. In 2015, a project was completed that removed the suspended ceiling and restored the original character of the space.

1938 Ranger Residence

This single story building was constructed using the same vernacular and materials as the Visitor Center. It is built of structural adobe bricks clad in stucco. As originally constructed, it was a one bedroom house with a living room, kitchen, and bathroom. A terrace with a low stucco wall enclosure was constructed at the front entry and a porch was constructed at the back entry.

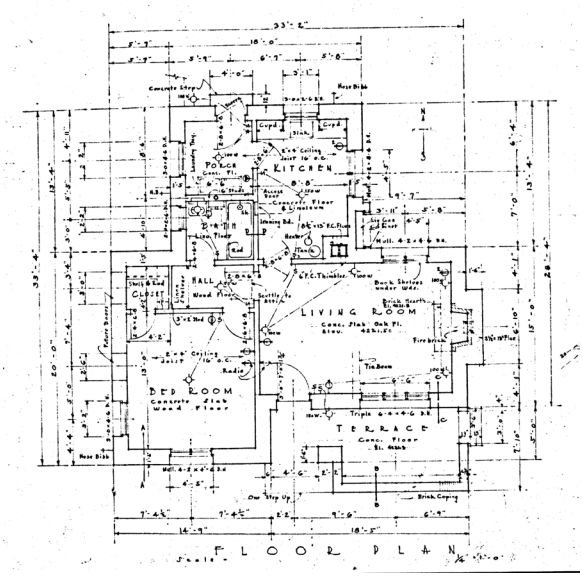


Figure 1-48. 1936 floor plan for the Ranger Residence (eTIC collections SCBL-317-3030-B)

The 1942 Master Plan proposes adding a second bedroom on the west side of the building. A terrace is shown in the 1936 drawings but the 1942 drawings propose the terrace be reconfigured with only an entrance from the east, and the southwest corner reconfigured.

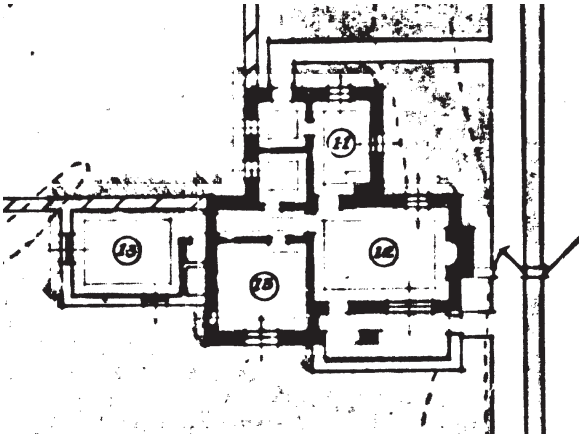


Figure 1-49. Residence on the 1942 Master Plan (SCBL collections id161817)

In 1949, an addition was constructed on the west end of the 1938 Residence that added a second bedroom and a laundry room. It was built of CMU with a stucco finish to match the original building.

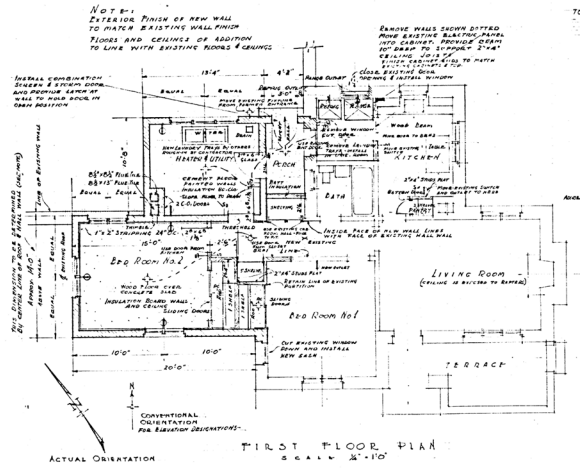


Figure 1-50. 1948 construction documents showing the floor plan for the new addition (eTIC Collections SCBL-317-3030-F)



Figure 1-51. Construction of the new addition, 10/16/1949 (SCBL Collections sb3138)



Figure 1-52. North elevation prior to site wall reconstruction, 08/13/1951 (SCBL Collections sb3255)

In the late 1980s, the 1938 Residence was converted to NPS staff offices. Overall, the interior layout was retained, along with many of the finishes.

In 2014-2015, the building underwent a significant interior remodel. The original Living Room was divided into an entrance hallway and an office and the interior door removed and replaced. The hall between the original kitchen and north entry door was converted to a mailroom and divided from the kitchen by a new wall. The kitchen, which had been in use as the supply and copy room, was converted to an office.

1958 Ranger Residence

Built during the last major construction effort at the monument, the 1958 residence retains the overall character of the rest of the buildings with some updates that reflect design characteristics of the 1950s. It is a wood frame building with a stucco finish and a wood shingled gable roof. A garage is located on the west end with more public rooms including the living room in the center, and bedrooms on the east end. There is a large Chicago style window on the south elevation, and the rest of the windows are one-over-one. A man entry door was installed on the west side of the garage around 2010.

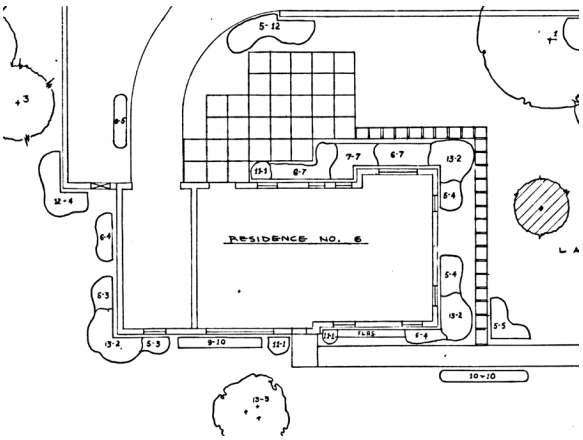


Figure 1-53. 1958 Residence on the Planting Plan (SCBL collections id152192)

Maintenance Shop

In 1936, CCC workers constructed the Maintenance Shop out of adobe brick on concrete footings and a partial concrete foundation. A stucco coating was applied over the adobe and the roof had wood shingles.



Figure 1-54. CCC footings, 1936 (SCBL Collections sb1059)

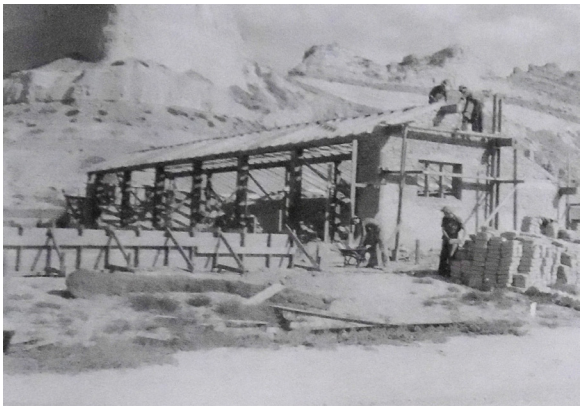


Figure 1-55. CCC workers constructing the building, 1936 (SCBL Collections sb510)

As originally constructed, it was a linear six bay structure with wood panel roll-up garage doors on the south elevation of each bay. It has a saltbox roof with the peak located at the south third of the building so the rafters drop lower on the north elevation which has no window openings. Wood rafter tails are exposed on the south and north elevations. Historic photos show three six-lite casement windows with a heavy timber header and a

wood sill on the east and west elevations.



Figure 1-56. 1936 after construction was completed (SCBL Collections sb500)



Figure 1-57. 1937 image showing the original overhead doors (SCBL Collections sb178)

Photos taken in 1949 indicate the structure was unchanged on the exterior from the original layout.



Figure 1-58. North and east elevations, 9/25/1949 (SCBL Collections sb3123)



Figure 1-59. South and east elevations, 9/25/1949 (SCBL Collections sb3122)

In 1958, two additional bays were constructed on the west end of the building using CMU.[52] No plans could be located documenting this work. Photographs show that the exterior finishes match the original stucco finish and a window matching the original window on the west elevation was installed, or the original window was relocated. All of the original bay doors were replaced with wood panel three-lite roll up garage doors.

52 Perrin, Natalie K., Greenwald, Emily and Pollarine, Joshua. National Register Nomination Update Form, 2012, page 10.

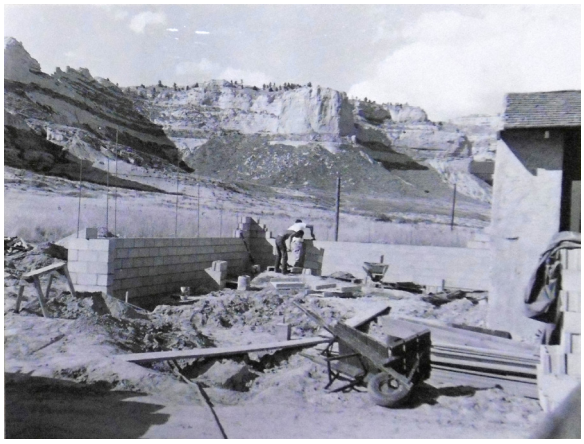


Figure 1-60. Constructing the 1958 addition construction, 5/1958 (SCBL Collections sb2251)

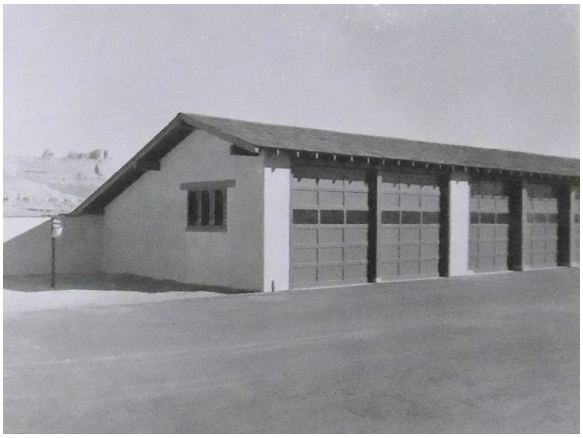


Figure 1-61. Southwest end of the building after the 1958 addition construction, 11/1958 (SCBL Collections sb2296)

A second addition in 1971 added one more bay to the west end of the building. This addition was also constructed of CMU and photos of this work show a stucco finish was installed over the CMU and a new window in the west wall.



Figure 1-62. "West wall of building showing roof anchor. Wall foundation is 3" in ground", 4/6/71 (SCBL Collections)



Figure 1-63. "Putting on stucco", 4/23/71 (SCBL Collections)

In 1981, a third addition was constructed on the west end of the building that added four bays. The plan and elevation of this work show the center two bays with overhead doors, the west-most bay has a wall with a man door entrance, and the east-most bay has a narrower overhead roll up door with a man door next to it. The elevation also shows that the west bay of the 1958 addition was converted from an overhead roll up door to an

infill wall with a man door entrance prior to 1981.

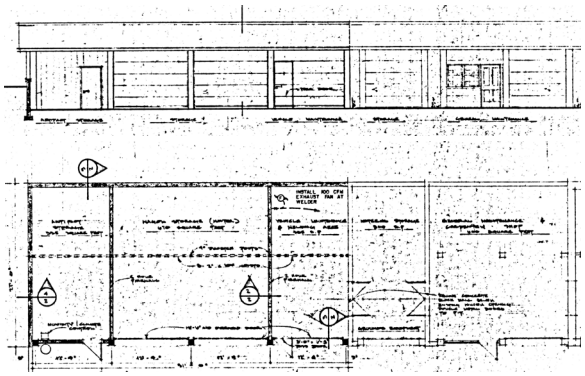


Figure 1-64. West end of the south elevation and plan from the 1981 addition drawings, 9/9/1981 (SCBL collections)

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Part 1: Physical Description Overview

Buildings

Overview

Four historic buildings are located at Scotts Bluff National Monument. This section includes a brief development overview of the buildings followed by a detailed evaluation and analysis of each element at all of the buildings. Figures throughout this HSR are related to the text directly above, except where specifically called out.

Visitor Center & Comfort Station

The Visitor Center is the oldest building on the property, though it has undergone two additions to achieve the current configuration. Today it is an "L" shaped building in plan and serves as the museum space and visitor center for the monument. NPS office space is also housed in the building. It is a one story building with a basement and a one room/two story tower. Exterior walls are adobe block masonry with a stucco finish or brick with both finishes painted. The public entrance is on the south facade, with additional entrances for the NPS staff on the west and north facades. A Comfort Station, constructed in conjunction with the second addition, is located just east of the Visitor Center.



Figure 1-65. Main, south, elevation (KAC, 6/16/2015)

1938 Residence

The 1938 Residence was constructed during the second major round of construction at Scotts Bluff National Monument. It was originally a one bedroom residence that was enlarged to the west in 1949 with the addition of a second bedroom and a laundry room. Both the original and the addition have a stucco finish over masonry and wood shingle roofing. It is a one story building that was converted from a residence into office space for the NPS.



Figure 1-66. South and east elevation (KAC, 6/16/2015)

1958 Residence

The 1958 Residence was constructed as part of the Mission 66 work at the monument and generally retains its original materials and layout. CMU walls have a stucco finish and the roofing is wood shingle. It is a one story building with a basement, three bedrooms, and a one car garage. The main entrance is located on the south elevation with a second entrance located on the north elevation.



Figure 1-67. South and east elevations (KAC, 6/16/2015)

Maintenance Shop
The Maintenance Shop is a linear building that was originally constructed in 1936 and has undergone three additions, all constructed to the west of the original. It was constructed as a series of bays, each with an overhead door on the south elevation, though some of the doors have been removed and infilled with wood framed walls.



Figure 1-68. South elevation (KAC, 6/16/2015)

Building Existing Conditions & Condition Assessments

The disciplines of Architecture, Structural, Mechanical and Electrical Engineering are addressed individually in each section.

Existing Conditions

The Existing Conditions section describes the current conditions, by discipline and by component, as observed on site during the June 2015 site visit.

Condition Assessment

Following the Existing Conditions section, each feature/system is evaluated and assigned an attendant condition rating. A general building condition assessment is presented first, followed by the condition assessment and ratings of each feature or component. The condition rating system is as follows. (Note: These terms are also applied to the overall structure/building.)

Good - The feature is intact, structurally sound and performing its intended purpose. The feature needs no repair or rehabilitation, but only routine or preventive maintenance.

Fair - The feature is in fair condition if either of the following conditions is present:

- There are early signs of wear, failure or deterioration though the feature is generally structurally sound and performing its intended purpose – or –
- There is failure of a portion of the feature.

Poor - The feature is in poor condition if any of the following conditions are present:

- The feature is no longer performing its intended purpose – or –
- Significant elements of the feature are missing – or –
- Deterioration or damage affects more than 25% of the feature – or –
- The feature shows signs of imminent failure or breakdown.

Unknown - Not enough information is available to make an evaluation.

Part 2: Treatment and Use Overview

Overview

Presented after the Existing Conditions and Condition Assessments, the treatment section presents treatment recommendations for the repair, protection and stewardship of the buildings at Scotts Bluff National Monument. Treatment recommendations are founded on review of historic documentation, assessment of existing conditions and history, current building function and application of the Secretary of the Interior's Standards and guidelines as they apply to the treatment of historic buildings.

Treatment Priorities

Treatment priorities are classified as one of three options:

- Critical
- Serious
- Minor

A Critical Deficiency of a feature or elements exists where:

- There is advanced deterioration that has resulted in failure of the building feature or element or will result in its failure if not corrected within two years, and/or;
- There is accelerated deterioration of adjacent or related building materials as a result of the feature or element's deficiency, and/or;
- There is a threat to the health and safety of the user.

A Serious Deficiency of a feature or element exists where:

- There is deterioration that if not corrected within 2 to 5 years will result in the failure of the building feature or element, and/or
- A threat to the health and/or safety of the user may occur within 2 to 5 years if the deterioration is not corrected, and/or
- There is deterioration of adjacent or related building materials and/or systems as a result of the deficiency of the feature or element.

A Minor Deficiency of a feature or element exists where:

- Standard preventative maintenance practices and building conservation methods have not been followed, and/or
- There is a reduced life expectancy of affected or related building materials and/or systems, and/or
- There is a condition with long-term impact beyond 5 years.

Chapter Organization

Each element that was addressed in Part 1 is identified and assigned a priority. Then a description of the recommended treatment(s) is provided.

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Visitor Center & Comfort Station (HSR Update) - Part 1: Physical Description

General Existing Conditions

The original 95% HSR for this building was written in May 2002 by Alan W. O'Bright. This HSR updates the existing conditions and assessment to reflect observations made in June 2015. Original formatting is maintained, with new next written in **Calibri Bold** to differentiate the new text from the original. See the Appendix for the introduction to the 2002 100% HSR.

The 2015 update revises the 2002 architectural finishes and room function descriptions to reflect current conditions and adds a thorough analysis of the mechanical, electrical, and structural systems by engineers in each discipline.

Site Systems

Site Context

See the 2015 Culture Landscape Report for more detailed site information.

Climate

Summers in the area are characterized as hot and dry with occasional heavy thundershowers late in the season. Winter is usually cold and windy. Winds are usually out of the west passing between the bluffs before reaching the visitor center. These winds can be variable at times, and gusts can exceed 80 miles per hour. Special construction considerations must be taken to insure that the wood roof on the buildings do not blow off.

The average annual precipitation is fourteen inches, with occasional heavy snows in the winter, and hail storms. No lightning strikes have been known to directly strike the complex, but lightning has affected power service on occasion. Tornadoes are a frequent visitor to western Nebraska, but none have been recorded in the immediate vicinity of the complex.

Grade and Drainage

Grade in the immediate area of the Visitor Center is relatively flat with a slight sharp decline just north and east of the amphitheater.

Few drainage problems have been recorded around the building. An unusual seven inch rainfall was recalled to have occurred sometime in the 1940s or 1950s that resulted in large flows of water rushing off the bluffs into the surrounding prairie, but no flooding occurred at the visitor center complex.[21] **In June 2015, unusual amounts of rainfall over the spring resulted in water entering the basement. Water infiltrated the majority of the rooms, ranging from slightly damp flooring to a couple inches of standing water in select areas. Intervention by park staff managed the unusual water conditions by pumping the water out of the basement and bringing in fans and dehumidifiers to help dry the spaces out. This event lasted seven weeks.**

Vegetation

Arid conditions of western Nebraska limits natural vegetative growth surrounding the visitor center complex to short prairie grasses, low-lying shrubs, and succulents. Plantings in the immediate area of the complex are intended to control erosion and wind. Surrounding most of the east, south, and west elevations of the Visitor Center are gravel beds with a selection of shrubs. Between the beds and sidewalks are mown lawns watered by an underground sprinkler system. Immediately to the east of the Visitor Center is a small stand of mature, healthy pine trees.

21 From Ron Cockrell interview with Merrill J. Mattes, 8, in Cockrell, 1983 Administrative History, 74.

Pavement
All roads, parking lots and sidewalks surrounding the Visitor Center are of concrete. All are in good condition.

Amphitheater surfaces are covered by pea gravel possibly laid over broken asphalt paving under the benches with concrete aisles on the sides and down the middle. Nearby trails and a short section of walk at the west amphitheater entrance are paved with asphalt. There is a small area of brick paving surrounding the flag pole.

Fencing
No adobe walls remain. A small section of six foot garden wall between the Jackson Wing and public restroom building and another wall extending 40 feet north from the restroom building are constructed of concrete with a stucco finish. These walls are in fair to good condition. **A section at the north end of the wall is in fair condition with the stucco finish failing and falling off.** Except for the adobe garden wall, the remainder of the east and north faces of the amphitheater are enclosed with a wooden, vertical plank fence in good condition.

Exterior Seating
The only seating available in **front of the building** is on the stuccoed masonry, serpentine sign and time capsule pedestal directly in front of the building. Built in seats flank the entrance porch. **Benches have been installed on the north end of the new restroom building.**

Flag Pole Area
The flagpole sits almost directly in front of the primary building entrance. The area consists of a 5 inch diameter, 35 foot spun aluminum pole, brick paving surrounding the pole, and a brick with granite cap time capsule that also serves as a seat. All are in good condition.

Amphitheater
Amphitheater seating consists of wood plank benches on steel framing set into concrete piers (Figure 1-69). The benches have been replaced on several occasions according to the park. **The benches are in good to fair condition with a few wood benches cracked in places and some of the metal supports rusting.**

The stage, fire pit, and fixed screen were constructed in 1958 to facilitate evening programs. The stage is constructed of concrete slab and is good condition. The brick fire pit is in poor condition. The wood-framed screen with plastered surface is supported by heavy steel posts. The screen also supports speakers. The entire unit is in good condition.

A small projection booth, added in 1988 to facilitate slide and movie projections, is constructed of stucco over wood frame. It is in good condition.

Site Lighting
General lighting is provided by sodium vapor fixtures fastened to the Visitor Center tower cornice and to various elevations of the building. **Concrete "Terra-Form" bollard area lighting fixtures are located throughout the site, primarily around parking areas and along sidewalks. Of the thirty-seven (37) concrete bollard area lighting fixtures, twelve (12) are located around the eastern parking lot, lamped with 50W #8017 Medium Base Metal Halide lamps with the remaining twenty-five (25) located along the sidewalks and employee parking lot on the north side of the site, lamped with 60 Watt Equivalent Medium Base Cree LED lamps.**

Signage
A 40 foot long serpentine-shaped sign greets visitors approaching the Visitor Center entrance from the parking lot. The thick, low lying construction also provides impromptu seating. Constructed of cement stucco over masonry, the sign features battered sides with soft, rounded corners more in character with the mission style of adobe construction. The sign is in generally good condition with a single crack at an inflection point and hairline cracks throughout.

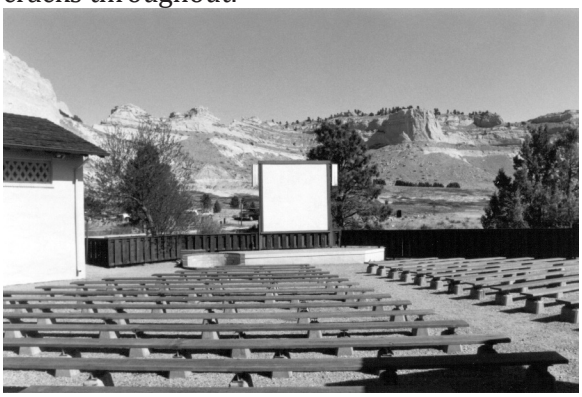


Figure 1-69. Amphitheater at rear of the Visitor Center, April, 2000. This view to the northwest shows the plank benches in the foreground, the large permanent movie screen in the middle ground, with the bluffs well beyond. (AWO, SCBL 01-11).

A sign reading "Oregon Trail Museum" is located just in front of the ranger office south-facing window. Constructed of metal fastened to heavy wooden posts, the sign is in good condition.

A collection of three bronze plaques commemorating the Pony Express is fastened to a stuccoed masonry block just southeast of the public restroom building. It is in good condition with a few hairline cracks.

Various other traffic control and informational signs are mounted to 4 by 4 stained posts around the area.

Miscellaneous Site Furniture
Other site furniture include a bike rack at the south edge of the parking lot, a traffic control gate at the bluff road entrance, and a recycling receptacle, anchored trash can, and cigarette cans clustered around the front entrance. In April 2000 soda machines were relocated from the building interior to the amphitheater. **By June 2015 the soda machines were relocated to the south side of the new restroom building.**

Structural Systems

Foundation Systems
All Visitor Center foundations are constructed of reinforced concrete with spread footings. Foundation wall thickness generally matches that of first floor walls. All foundations exposed to view appear to be in good condition with few detectable cracks.[22]

Foundations beneath the public restroom building, **based on the 1936 drawings for the building, are composed of 1'-5" thick concrete stem walls matching the width of the adobe walls above. These concrete foundations extend into the ground at least 2'-6". The foundation walls have a higher elevation on their inside face than their outside face to form a curb that is poured integrally with the concrete floor slab.** It **was** believed that an abandoned toilet vault underlies the concrete floor system **but it is not indicated on the 1936 drawings for the Comfort Station**.

22 Fitzpatrick, Thomas R. "Structural Evaluation, Visitors Center (HS-2), Scotts Bluff National Monument, Gering, Nebraska," (Ann Arbor, Michigan: Fitzpatrick Structural Engineering, 16 October, 2001), (hereafter cited as Fitzpatrick, Structural Evaluation), 12.

Floor Systems

Floors within the History and Landmark Rooms consist of one way cast-in-place concrete slabs over integrally cast, reinforced concrete beams. These systems appear to be in good condition where exposed to view. Live loading for these floors is limited to between 80 and 85 pounds per square foot.[23] **Capacity is governed by the shear capacity, and not the bending capacity, of the concrete beams.**

Floor systems beneath the Jackson Wing, tower first floor, the rear offices (rooms 112 and 113), and public restroom building are concrete slab on grade: 4**" thick with welded wire reinforcing.** There is no indication of heaving or movement beneath the finishes.

The tower second floor is believed to be wood framing supported by a pair of 8 inch by 10 inch finished beams exposed in the ranger office (104). Exterior stucco finishes bulging at the second floor level are not indicative of any deflection in that floor system. The live load capacity is limited to 74 pounds per square foot.[24] **The floor is currently load posted with a rating of 30 pounds per square foot.**



Figure 1-70. **Load posting of 30 psf for the tower second floor (IRG, 6/16/2015).**

Wall Systems

Museum and Jackson Wing walls consist of three wythe fired brick laid in a common bond (header course every six courses) set in Portland cement mortar. Joints are tooled shallow concave. A reinforced, cast-in-place concrete bond beam tops the walls according to the construction drawings. Generally, the painted brick walls are in good condition with no indication of mortar or brick failure as a result of moisture penetration.

There are indications of structural movement between the joining of the Museum and Jackson Wings. At the south elevation a generally vertical crack extends from the foundation through the bond beam. Another crack at the opposite side of the building extends from the bond beam and **jogs** through several brick courses. These cracks may be an indication that the building is creating its own expansion joint at the bond point of the two wings along the entire 69 foot length of solid brick masonry. There are two minor horizontal cracks just beneath the bond beam at the north elevation near the northeast corner of the Jackson Wing. The reason for those cracks is not understood at this point. **It is speculated that the horizontal cracks are**

23 Fitzpatrick, Structural Evaluation, 14-16.
24 Fitzpatrick, Structural Evaluation, 16-17.

related to shrinkage of the concrete bond beam in combination with temperature and moisture related expansion and contraction of the brick masonry that differs from that of the concrete. Differences in the expansion properties of the materials is exacerbated at the wall corners where surface area exposed to the environment is greatest.



Figure 1-71. Adobe Brick Factory, 1936. This quarry was located on park land at the base of the Scotts Bluff near the north boundary. (SCBL photo archives, Drawer 3, No. sb492).

The remainder of Visitor Center bearing walls including Landmark Room, tower, rear offices (Rooms 112 and 113), and the Comfort Station consist of sun-dried adobe bricks fabricated from native soils quarried and manufactured within park boundaries, (Figures 1-71 and 1-). According to one source western Nebraska is within the low rainfall region in which adobe can be used.[25] An entire brick found in an attic space measures 4 inches by 8 inches by 16 inches. The brick is composed of native clay mixed with straw that abrades easily to the touch.

25 Elbert Hubbell, Earth Brick Construction, (Washington D.C.: United States Department of the Interior, 1943), 24-25.

The bricks are protected from weathering with a stucco coat of Portland cement-based mortar, and the broad roof eave. These walls are topped with a reinforced concrete bond beam. Ranger office (104) and bathroom (108) windows and the west entrance are headered by wood and steel composite lintels.



Figure 1-72. Adobe Brick Factory, 1936. CCC workers are forming adobe bricks and setting them out to dry. (SCBL photo archives, Drawer 3, sb518).

Traditional adobe construction requires very thick walls to support dead and live loads due to adobe's relatively low bearing capacity. In other words, adobe loads must be spread out over a much larger area than fired brick construction. Contemporary codes require adobe bricks to sustain an average compressive load of 300 pounds per square inch, as compared with a standard 2,500 pounds per square inch compressive load of brick.[26] Designers of the adobe additions must have realized the material's load limitations as they supplemented the relatively thin 18 inch walls with steel and concrete posts and concrete bond beams (Figures 1-29 and 1-30). The designers

26 State of New Mexico Construction Industries Division 1997 New Mexico Building Code, (Santa Fe, New Mexico: Regulation & Licensing Department, Construction Industries Division, 31 December, 1998, 51.

may have been familiar with post adobe construction style popular with California residential adobes.[27] In essence, the post and beam form a framework infilled with adobe bricks. The adobe is left only to support its own weight and a couple of lintels. With this method the walls are able to be kept thin to provide a greater amount of interior space that normally would have been taken up by thick, traditional adobe walls.

The tower and Landmark Room north elevation appear to be exceptions to the post and beam construction method used in the other adobe additions. At the first floor tower walls are 27 inches thick to carry 18 inch thick second floor walls. Construction drawings and photographs indicate that concrete posts were placed flanking each of the tower windows (Figures 1-28 and 1-30). The posts appear to terminate at the second floor level and may not carry into the second floor walls.[28] No bond beams are called out at the second floor level in the drawing, and none are exposed on the tower at the second floor level, although from the photograph the flared post caps seem to insinuate that a bond beam was to have been constructed. At the Landmark Room the north end bearing wall is exceptionally thick to accommodate ducts concealed within the wall.

Interior surfaces are concealed by exhibits and framed walls, so all condition observations were made at the exterior. Examination of exterior stuccoed adobe surfaces revealed many hollow-sounding areas. There is also evidence that stucco surfaces have been patched with various cement mixes in the past. Some walls surfaces appear bulged, but the causes for this condition are only speculative at this time.

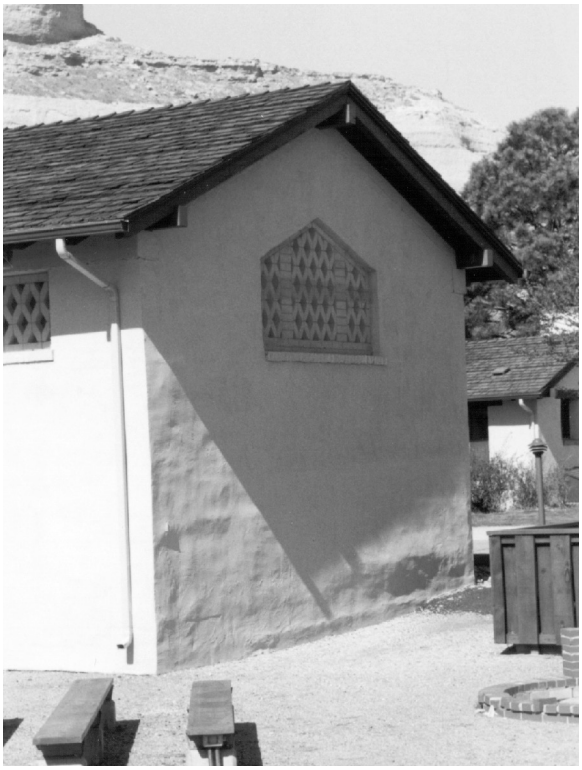


Figure 1-73. Landmark Room, north facade, April, 2000. Note the bulges and deformations in the stucco surface. (AWO, SCBL 01-7).

At the tower the exterior surface is bulged at the second floor level with numerous hairline cracks at the west façade. The bulging may be due original construction methods rather than a structural settlement problem. A 1937 construction drawing and a photograph (Figure 1-30) indicates that concrete posts flank the windows, but it is unknown if any horizontal reinforcing is present at the second floor level. West façade cracks may be a result of climate extremes on that surface. A reoccurring crack at the sill of the first floor tower window may be the result of

27 Duane Newcomb, The Owner-Built Adobe House, (New York: Charles Scribner's Sons, 1980), 68. Contemporary examples of the post adobe system expose the wooden posts at the exterior surface.
28 "Addition to Museum Building," NPS Drawing No. SB-2501-A, 20 February, 1937, Sheet 1, First Floor Plan, and Sheet 5, Section C-C.

differential movement between the shallow tower foundations and the adjacent deeper Museum foundations.[29]

The east and west façades of the Landmark Room exhibits a pronounced bulge at the window sill level, and open joints between the concrete grill and bond beam at the window heads. There are also hairline cracks near the ground. Paint failure in the area where the wall is flashed to the Museum Wing roof indicates that moisture is penetrating the wall system. At the north façade pronounced bulges were detected at the window sill level and another approximately two feet above grade (Figure 1-64). **Plaster removal at the bulge at sill level on the north elevation revealed wire mesh in the stucco, sound adobe units, and no delamination confirming speculation that the wall was built with localized bulges**. Numerous hairline cracks are also evident across the surface.

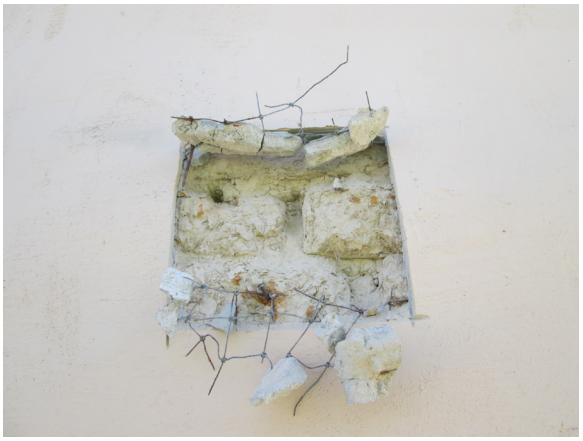


Figure 1-74. **Stucco removal on the north elevation of the Museum Wing revealing wire mesh, sound adobe units, and no delamination (IRG, 6/16/2015)**

At the Visitor Center north elevation outside of offices 112 and 113 there is a horizontal crack emanating at the east jamb of window 113-W2 just above grade level that continues around the corner to window 113-W1. There is also a slight degradation of stucco at grade on the north and east façades probably as a result of moisture infiltration.

The Comfort Station is constructed of adobe, but it is unknown if there are any vertical reinforcing elements concealed within the walls. **No reinforcing is specified in the drawings.** Wooden beams top the north and south walls. The stucco (cement plaster) surface appears to be in fair to good condition.

Roof and Ceiling Systems

The entire Visitor Center features medium-slope roofs with a five in twelve pitch. Live load capacities for all roofs exceed that required by code for snow loading.[30] At the exterior all extended eaves are supported by rough sawn rafters measuring 3½ inches by 7 inches and set at 24 inches on center. **A coupon was removed from a rafter from the original Museum Building.** The species has been identified as Douglas-Fir. Exposed rafter tails extend 30 inches beyond building faces. However, these hefty rafters are more decorative than structural. According to the construction drawings the "false ends" carry only eave loads, while the remainder of the roof is carried by nominally-sized wood members and decorative trusses. Roof framing systems exposed to view appear to be in excellent condition except for two minor construction flaws in a section of roof above hall (103).[31] **Additionally, there is a 4x4 dropped purlin that is crudely cut where it bears on the original lobby roof (Figure 1-75). It is unclear if this element was installed during the 1937 addition campaign or it was a later**

29 Fitzpatrick, Structural Evaluation, 9.

30 Fitzpatrick, Structural Evaluation, 13-14.

31 Fitzpatrick, Structural Evaluation, 7.

modification intended to ameliorate sag in the rafter framing. Because the end of the purlin lands between rafters and because the bearing surface is not bevel-cut to meet the sheathing flush, it could fracture the existing sheathing during a snow event. Furthermore, the purlin is not of adequate size to sufficiently serve as an intermediate support to the rafters.



Figure 1-75. **Attic over Hall 103 looking west. Space over Hall 106 and WC 108 in background Note 4x4 purlin bearing on lobby 101 roof framing (IRG, 6/16/2015)**

Museum Wing construction drawings indicate that rafter tails terminate at the bond beam, and the bulk of the roof structure is supported by nominally-sized 2 inch by 8 inch framing bearing at the wall top by an anchored wooden plate.[32] According to the drawing detail solid bridging was to be installed at mid-span and the ridge. Supplemental support is provided by timber purlins at rafter mid-span and ridge, which are in turn supported by timber trusses. Purlin ends appear to extend beneath rake eaves at the exterior. All structural members exposed to view appear to be in very good condition.

32 "Administration Building & Museum, Scotts Bluff National Monument," NPS Drawing No. SB-3007, 2 April, 1934, Sheet 7, Museum Truss Detail.

The Landmark Room addition features a roof structural system virtually identical to that found in the Museum Wing. The only difference is a slight detail modification at the rafter to wall connection. The tower roof features the false rafter tails with 2 inch by 6 inch nominal framing for the remainder of the roof and ceiling system according to the 1937 drawings. Ceiling framing in Hall 103 consists of exposed finished 6 inch by 10 inch beams at 24 inches on center. Ceiling framing above the Hall 106 and Bathroom 108 area is believed to be 2 inch by 4 inch nominal members. Ceiling framing in the lobby (101) is unknown. Portions of thirteen rafter tails were sawed off at the north elevation of the office addition sometime after 1941 to presumably prevent head injuries from the low-lying eave line. Otherwise Landmark Room roof systems appear to be in good condition.

The Jackson Wing roof appears identical to other Visitor Center roofs at the exterior. Framing viewed from a cavity at the east end of the wing confirmed that the roof matches the construction drawings that consist of a site-built repetitive truss system of nominal lumber. False rafter tails extend 4 feet beyond the wall to a header nailed between trusses. Trusses consist of 2 inch by 8 inch rafters, 2 inch by 6 inch bottom chords, and 1 inch and 2 inch by 6 inch web members. Trusses are set at 24 inches on center but vary slightly from the location of the false rafters. Rafters are stabilized with doubled 2 inch by 8 inch beams set at the top of the bottom chord. A 2 inch by 10 inch ridge board tops out the roof framing. There appears to be no deterioration in the Jackson Wing roof framing.

Exterior Envelope

Wall Finishes

Additions constructed of adobe are coated with a Portland cement-based stucco. The stucco is bonded to a heavy gauge wire mesh, but details of how the mesh is held to the adobe is unknown. The stucco does not cover concrete bond beams. The original stucco mix is not indicated in the construction drawings. Stucco mix tests conducted during the 1990s could not be found in park files. **Stucco testing was performed in 2015 and is included in the Appendix.**

Numerous topical repairs have been made to the stucco surfaces. Bulges in the finish were observed in several areas including at the north elevation of the Landmark Room and the south and west elevations of the tower. However, it is suspected that these bulges are the result of original workmanship and not indicative of structural distress.[33] No structural cracks are associated with the bulges indicating that the adobe bricks have not settled.

All exterior wall surfaces, including the Museum and Jackson Wings, and the Comfort Station are painted. A textural difference was noted between the Museum and Jackson Wings. It appears that the Museum Wing has experienced more paint episodes or paint failure than the Jackson Wing, as the surface is rougher. According to park maintenance staff paint finishes continuously fail from around the front entrance area and therefore must be painted every few years.[34] **Paint sample analysis revealed the original color of the building was Peach Cream and the current color, Light Peach, is slightly different. See the Appendix for the full paint report.**

During attic investigations a section of the north exterior elevation of the Museum Wing with circa 1935 exposed finishes was discovered. This portion of the brick wall was concealed by the office extension only three years after construction of the Museum Wing. The exposed finish is a light gray, or putty, color that differs from the present building color mimicking the bluffs clay.

Roof

Construction drawings indicate that asbestos shingles were to have been installed on the Museum and Landmark Room constructions, but wood shingles seem to be in place when the Landmark Room was constructed (Figure 1-33). It is unknown if the asbestos shingles were initially installed then removed by 1937, or never installed in the first place. A section of original wood shingles was discovered in an attic space above Hall 108 adjacent to the chimney. These shingles were little exposed to the elements before they were covered by the Landmark Room construction. They demonstrate a 7½ inch exposure.

Regardless, the roof is presently sheathed with 24 inch sawn wood shingles. Every fourth course is doubled to accentuate the horizontal lines of the building. In the 1934 drawings the asbestos shingles were indicated to be doubled every fifth course. Existing shingles are painted or stained dark brown.

According to park maintenance staff, the roof was replaced about 1985.[35] Special details ensure that the shingles remain in

33 Jake Barrow to Alan O'Bright, 24 January, 2001, during adobe scoping investigation.

34 According to park maintenance staff this section of the building was sandblasted prior to 1970 in an attempt to make the paint stick. However, the brick appears smooth and undamaged.

35 Robert Hamann to Alan O'Bright, 24 January, 2001. Shingles removed in 1985 were believed to have dated to construction of the additions.

place during frequent high velocity winds. Even then, shingles occasionally blow off; several were found in the prairie during this inspection. Special construction includes the use of 24 inch shingles, and extra long nails to provide better holding power. Although some shingles are missing, the roof is in generally good condition.

Investigations in attic crawl spaces confirm construction drawing details showing shingles nailed to 1 inch by 6 inch board sheathing. At overhangs where soffit sheathing is exposed at the underside, finished 1 inch by 6 inch V-groove boards are used. Cornice and rake trim consists of simple rectangular trim in good condition.

All rafters, purlins, soffits, trim, and roof shingles are painted dark brown.

NPS replaced the roofing after the initial site visit during time the report was being written. New shingles are wood and match the previous installation details, though the dark stain, historically used on all roofs in the complex, was not applied prior to installation.

Flashing

All roof flashing appears to consist of painted galvanized sheet metal. Step flashing, at roof to wall intersections, is set into the stucco. At the tower, step flashing received a stucco coating presumably to conceal it from view. Step flashing at the intersection between the Landmark Room east wall and the Museum Wing roof may be allowing water to enter beneath the stucco.

Gutters and Downspouts

Historic photographs indicate that the Visitor Center received no gutters until perhaps the last time the building was re-roofed. Five inch aluminum ogee-style gutters are presently on the building. These direct water to corrugated rectangular downspouts that deposit water at grade. **Leaders have been installed at some downspout terminations to direct water away from the building.**

A sheet metal water stop integrated with the roof shingles was added above the front entrance. This directs water through the roof to a three inch diameter downspout.

All gutter systems are painted the same dark brown as the rafter tails and trim, and appear to be in good condition.

Windows

Windows that appear high on exhibit wings of the Visitor Center are faced at the exterior with faceted concrete brick mortared into a grill pattern. According to construction documents wooden hopper-type sash backed each of the concrete grills. The original sash are believed to be concealed behind plywood at the interior. Sash at the north wall of the History Room that were concealed upon construction of the office extension in 1938 were found to be in excellent condition when viewed from the attic crawlspace above the office. Over time the windows were louvered, curtained and finally sealed to prevent the entrance of ultraviolet light that could degrade interior exhibits. Hardware cloth is bolted to the exterior of the concrete grills to prevent birds from nesting in grill cavities according to the park. Insect screen can also be seen just beyond the grills. Most brick sills require repointing.

The lone exposed sash at the east gable end of the Jackson wing can be viewed only by crawling into a cavity behind the diorama exhibits. Here the intact sash were found to be of stained and varnished wood with clear glass. The general condition appeared to be

good although a detailed inspection could not be made.

Hopper-type windows very similar to those seen in the Visitor Center construction drawings, are within the public restroom building. The sash are tucked behind concrete grills and have screen windows. The sash are heavily painted but seem to operate.

When Visitor Center wings were initially constructed, windows in office rooms 104, 112 and 113 consisted of operable wood casement windows with deep-set mullions. Each sash was divided into eight lights. These were replaced by fixed, anodized aluminum, double glazed windows around the 1970s or 1980s. The initial wooden frames remain in place; some of the old screen hardware still remains. **All of the hardware was removed by 2015 but the frames were still in situ.** The aluminum windows probably save energy, but they do not have the depth and richness of the previous wood windows. The aluminum windows also provide occupants no ability to open them to promote ventilation. Plexiglas was screwed to the exterior frames of windows 112-W1 and 113-W2 as a safety precaution, as the sills rest near the ground. **By June 2015, the plexiglass was removed from these windows.** Window 104-W1 has a broken seal, there is some minor spalling of brick sills, and the wooden frames need painting. But otherwise these windows are in good condition.

Second floor tower windows have been replaced by wood double hung windows. From historic photographs the original windows were casement-style with six lights per sash **and the current windows have four lights per sash.** The existing windows appear to function and are in generally good condition.

Basement windows at the Landmark and Museum Wings have been sealed from view behind interior partitions and exterior shed roofs over window wells. According to construction drawing window schedules these were to be steel windows with wire glass. The northernmost Landmark Room basement window sash was modified to accommodate a crude fire escape up through the window well. It is unknown if the other two window sash remain, or what their condition may be.

Exterior Doors

Over time all exterior doors have been replaced. From early photographs front entrance door 101-D1 was a massive vertical plank door with long strap hinges. The door also had a wood framed screen door that opened to the interior.[36] Although there are no photographs, west entry door 106-D1 may have been a wooden Dutch-style door. Both of these doors were replaced with painted steel flush doors with a large single window. The windows are accentuated with false diamond muntins. An emergency push bar is installed on the front entrance door. The west entrance door has a combination heavy aluminum screen door. The existing doors appear to be in good condition although these entrances do not meet accessibility standards (see Accessibility Assessment).

The door pair at 112-D1 leads from the office directly to the amphitheater. **The door is not used by the public, though it is used by NPS staff.** The door set is flush steel with large windows and each has an aluminum combination screen door. The doors appear to be in good condition.

36 see Scotts Bluff NM photograph archives, photos 2425 and 2426. Portions of the screen and wood door details can be seen.

Door 115-D2 is used only for emergency egress from the Jackson Wing. The steel flush door features a push bar with an exit alarm. It appears to be in good condition.

Interior Finishes and Use

Because of the diverse finishes, functions, and needs of each space within the Visitor Center, this section will assess each space with regard to historic and existing finishes, general appearance, function, and functional deficiencies. Basement spaces currently reflect rehabilitation of the past two or three decades in an effort to alleviate overcrowded offices. Historically, basement spaces were devoted mostly to storage and mechanical. Therefore, this analysis will address only current general finishes, function, and functional deficiencies. Other code deficiencies for hall and stairways are addressed in Life Safety Evaluation. **Due to unusual water infiltration in the basement at the time of the site visit, many of the materials and furniture had been relocated so exact configuration and use of some basement rooms could not be confirmed.**

Break Room 001

Employee break room finishes consist of painted wall board and concrete walls with a ceiling of exposed ducts. There are plywood cabinets against the south wall and a counter against the west wall for coffee pots and a microwave oven.



Figure 1-76. Break Room (001), April, 2000. In this view to the southeast, low-lying ceiling ducts and circulation route through this space make for crowded conditions. (AWO, SCBL 04-20).

The space is not at all adequate in size for the site; employees must eat in shifts due to the cramped space (Figure 1-76). The break room can accommodate only about five seated people at a small table. The traffic route from the stair to the conference room also compacts the usefulness of the space. Ceiling ducts are within 6 feet 6 inches of the floor in about a quarter of the area, and pose a safety hazard to tall employees. The space is not ventilated.

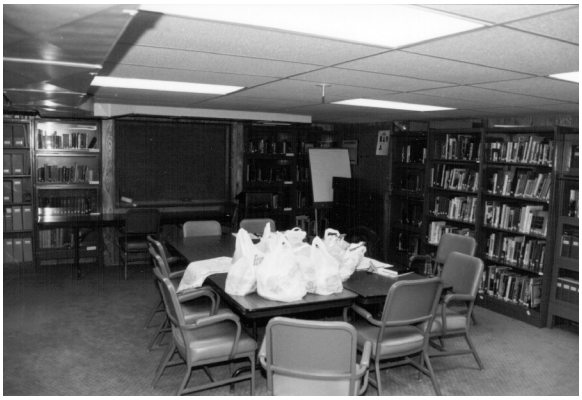


Figure 1-77. Conference Room/Library (002), April, 2000. This multi-function space features a very low suspended ceiling. (AWO, SCBL 04-18).

Conference/Library 002
This multi-function space serves as a general conference room, park library, two computer stations, map files, and audio video equipment storage. Walls are furred and paneled and the ceiling consists of suspended acoustical tiles and lighting. **A television is mounted on the east wall and a white board on the north wall.** A built in cabinet at the southeast corner houses the phone panel box, and there is a sump pit and pump centered along the north wall and now located beneath a computer desk. A window well against the south wall has been sealed over so that no natural light now penetrates the room.

The size of the area seems to serve the park well during general meetings (Figure 1-77). However, conflicts occur when employees need to use the space for other functions during ongoing conferences, or when employees travel from Stair 114 to the break room. The computer stations are used by several employees for Internet access. The ceiling generally measures 7 feet from the floor with soffits at 6 feet 6 inches. This height possesses safety problems particularly at the single riser to Stair 114.

Approximately 140 lineal feet of library materials are shelved within metal barrister-type bookcases against the walls. The collection holds about 5,000 books on Oregon Trail and western history that is available to the public upon request. The large map cases hold fifteen drawers of aerial photographs, utility drawings, topographical site plans, and master plan drawings. There are also sets of Civilian Conservation Corp blue prints that may be the only drawings in existence. The conference room is heated and cooled but not climate-controlled for the benefit of the paper collections. Audio visual equipment is scattered throughout the space.

Mechanical Room 003
This room was partitioned off from the large space beneath the Museum Wing to enclose the building's forced air furnaces. While most of the space is occupied by mechanical equipment, the park must use the space to store folding chairs and tables. To service the furnaces the chairs and tables must be removed.

Locker/Storage 005
This small space functions to provide seasonal interpreters with locker storage space, and is used for general storage. There are only four lockers for eight seasonals hired annually; most seasonals store their personal items in their car trunks due to cramped spaces. The space offers no privacy for changing clothes. Ten lockers are now installed in the room. A portion of the east end of the room was partitioned off by walls with a gypsum board finish to create an IT room.

Hall 006
This narrow corridor provides access to the collections and general storage areas. The hall's headroom is constricted to less than 6 feet 2 inches due to the quantity of pipes and ducts at the ceiling.



Figure 1-78. Sales Storage (007), April, 2000. This view to the west shows the head-banging pipes at the ceiling and cramped storage conditions. (AWO, SCBL 04-22).

Sales Storage 007

This space is used by the Oregon Trail Museum Association for storage of sales items, and houses the Association's floor safe and the Visitor Center's electrical panel boxes. The space contains approximately 200 lineal feet of open wooden wall shelves storing post cards, posters, books, maps and games. Sewer pipes intruding from the ceiling offer only 6 feet 2 inches of head room (Figure 1-78). While there is a flush door into the room it has no lock. **A door knob and lock have been installed on the door.**

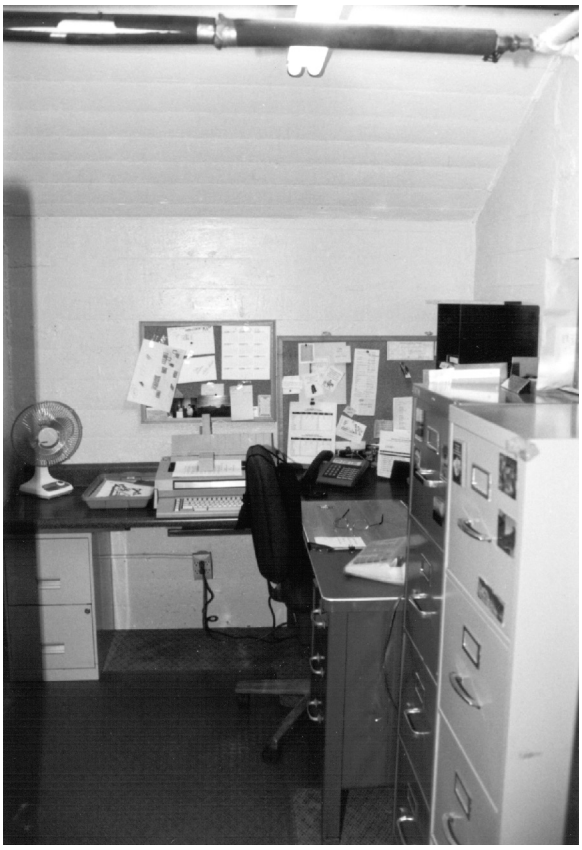


Figure 1-79. Sales Office (008), April, 2000. View to the east of cramped office conditions. (AWO, SCBL 04-23).

Sales Office 008

This space is an office for the Oregon Trail Museum Association manager. The room houses a small desk, two file cabinets, a small wardrobe, and about twelve lineal feet of books. The windowless, claustrophobic conditions are exasperated by a sloping ceiling due to the stair at the first floor (Figure 1-79). There is no secure door.

Sales Storage 009

This small space was carved out of adjacent Office 011 to provide additional storage space for the Oregon Trail Museum Association, and a large park-owned gun safe. The 90 lineal

feet of shelving stores postcards, toys, and film for sale to the public. The room is very cramped. **Metal file cabinets are now located in the room. A hollow metal door with a padlock has been installed so the room can be secured.**



Figure 1-80. Employee Kitchen (110), April, 2000. View to the east of extremely cramped conditions. (AWO, SCBL 05-2).

Kitchen 010
This employee kitchen includes a double sink, range, full-size refrigerator, and L-shaped counter top all within a room measuring less than 60 square feet. Light fixtures and ducts are within 6 feet 7 inches of the floor, and there is a primary sewer line routed directly over the range and sink (Figure 1-80). Only one person can occupy the space at a time, and only then, with difficulty.

Office 011
Until early 2000, this space was used as the park historian's office. It is currently used as a collections workshop, graphics workshop, and office storage. The space contains a desk, small drafting table, fireproof file cabinet, photocopier, about twelve lineal feet of book cases, collections cleaning tools, and some ranger storage. Natural light entered the space through two window wells until the wells were covered over and the windows sealed at the interior. Approximately forty percent of the ceiling is covered with ducts that hover 6 feet 4 inches above the floor, offering tall employees the chance to bump their heads. The space is generally cluttered with mismatched furnishings and stored items.

Collections Storage 012
The important William Henry Jackson collection, that includes about 400 drawings and paintings, is stored in this space in addition to approximately 5,000 other objects. Map files, rare gun collection, rare books, the park photo and slide collection, dry pressed plants, and wooden, ceramic, glass, metal, and bone objects round out the collection. A small table provides some space for object cleaning and examination.

When constructed in about 1958 the vault was about half its present size, and featured a heavy vault door set into a heavy steel frame.[37] The vault was expanded in 1979 in response to concerns over deterioration of the collection.[38] The west and south walls are constructed of eleven inch brick masonry, and the north and east walls are the eighteen

37 Scotts Bluff NM photo files, Negative No. 2249.
38 Cockrell, 1983 Administrative History, 32.

inch thick foundation walls. The ceiling is the exposed concrete structure of the Landmark Room floor system. A double-locked, heavy steel flush door is the only entrance. No pipes or ducts pass through the space.

There is no auxiliary climate control or ventilation within the space other than a dehumidifier that is operated only during wet seasons. Hygrothermograph charts indicate a steady 67 degree Fahrenheit annual temperature with 49 percent relative humidity that drops to 45 percent during the summer season. Security is provided by smoke and motion detectors, and a door contact. **Testing has discovered there are high levels of radon contained in this room. Signs on the door say "Radioactive 7" and state that it is a radon danger area and that time exposure in the vault is limited to 1 ½ hours.**



Figure 1-81. Collections Storage (012), April, 2000. View to the north along the only corridor through the space. (AWO, SCBL 05-11).

About 40 percent to 50 percent of the total volume of the room is occupied by collections storage cases, racks, and shelves (Figure 1-81). According to the park the collections storage room has reached its maximum capacity. Space to open cases and maneuver large objects within the vault is very tight.

Storage 013

Living history clothing and other objects are stored within this space that was carved from the Office 011 space within the past couple of decades. The room is also used occasionally as a dressing room. About 300 cubic feet of stored items create cramped conditions.

Lobby 101

Upon entry into the building, visitors are greeted by this cubic-shaped space that was constructed with the 1935 Museum Building (Figure 1-37). The lobby currently functions as the primary entrance into the building, visitor contact, a small amount of sales space, with a single bench for visitors. The area also is the primary traffic focal point between the entrance, theater and exhibit areas. Exhibit room lighting controls are located on the west wall in a small built in cabinet.

Lobby walls consists of painted brick, and the ceiling of stained beaded boards. The floor is carpet over concrete. Lighting is provided by a single historic chandelier centered on the ceiling, and a small amount of natural light from the entrance door and doorway to the ranger office. Animal heads grace walls above door height. Visitors entering the space immediately encounter a contact counter along the west wall that features two cash registers; one for fee collection and the other for Association sales (Figure 1-82). **Items on the counter have been rearranged, though two cash registers are still in use.** The counter is not accessible to employees and the public (see Accessibility Assessment).

According to the park, the space is too dimly lit. Visitors entering the room from bright sunlight have difficulty adjusting their eyes to the interior surroundings. During the summer the lobby is extremely crowded with poor circulation.



Figure 1-82. Lobby (101), April, 2000. This view of the west wall is similar to the 1941 image seen in Figure 1-36. The contact counter stretches across the space, and is shoe-horned between the front entrance and west wall. (AWO, SCBL 03-0).

Museum Exhibit Room 102

This space currently functions to exhibit various artifacts related to the Oregon Trail, and provide room for Oregon Trail Museum Association sales (Figure 1-83). Except for a full-size Mormon cart reproduction and an unfixed wood and glass case, all artifacts are exhibited behind large glass cases built against the north and south walls. Unfixed sales display shelves are arranged in an open manner on the eastern half of the floor. **By 2015, the cart reproduction appears to have been removed from the building and sales shelves have been relocated to Room 110.** Present-day finishes consist of wallboard walls, plywood and glass display cases, an acoustical suspended ceiling, and carpeted floor. Small portions of the east and west walls are painted brick. The room was painted off-white in the 1990s to brighten dark green surfaces.

Display cases conceal windows at the south elevation, while the office addition sealed two north wall windows. It is unknown if the window sash are yet in place. No natural light enters the space. General lighting is provided

by a few incandescent fixtures hung from the ceiling, and supplementary light is provided in each of the display cases. **The incandescent fixtures have been removed and replaced with pendant hung fixtures suspended from the trusses.**



Figure 1-83. History Room (102), April, 2000. The sales area is crammed into the middle of the space in this view to the east. Note the suspended ceiling that now conceals timber trusses (see Figure 1-26 of same view). (AWO, SCBL 03-4).

The suspended ceiling was installed as a result of Federal energy-saving mandates of the 1970s according to the park. Yet, when the ceiling cavity was examined it was found that batt insulation is tossed and upturned negating the bulk of those savings. Finished timber roof trusses, intended to be exposed in the original design, remain concealed above the suspended ceiling (Figure 1-84). The trusses appear to be in good condition although with a hefty dust accumulation and a little damage from fasteners supporting the suspended ceiling. **The suspended ceiling was removed in 2015 and the damage to the beams repaired so the space has been returned to its original appearance with exposed beams. Per park staff, the fiber board panels between the roof trusses were removed, insulation was installed above them, and the panels were reinstalled. New pendant hung light fixtures were installed as part of this project.**

According to the park exhibits in this space are at least fifteen years past their prime. Their installation date is estimated to be during the 1960s. **A separate project to update the exhibits in the building is ongoing.**



Figure 1-84. Attic above History Room (102), April, 2000. In this view to the west timber trusses are a bit dusty, but in good condition. Note the overturned batt insulation. (AWO, SCBL 02-3).



Figure 1-85. **Original ceiling finishes exposed in the History Room (KAC, 6/16/2015).**

Hall 103

The hall was constructed in 1938 as a kind of anteroom to the Landmark Room exhibits, and to provide access to the two park offices. Multiple functions within this area combined with its use as a primary traffic way, combine

to create very crowded conditions in the hall. Functions include visitor register book stand, NPS passport stamping station, pamphlet case, donation box, interactive computer exhibit available to the public, and a drinking fountain (Figure 1-86). **The interactive computer exhibit has been removed from this space.** Until recently a small niche in the west wall housed a soda machine. **A display with pamphlets for visitors is mounted to the west wall of the niche.**

Hall finishes include faux-grain Masonite paneling on the walls, carpeted floor, and an exposed beam ceiling with fiberboard infill between beams. Lighting is provided by a single 1950s fluorescent fixture centered on the ceiling. The dark finishes combined with extremely poor lighting make for a cave-like atmosphere. **Finishes in the Hall have been updated – the walls are gypsum board painted white with a rubber base. The central light fixture is now a 2' x 4' fluorescent fixture and a second light fixture was installed in the west niche. All of these changes make the space feel more open and no longer cave-like.**

The hall is extremely crowded during the peak visitor season, as it serves as a primary traffic way between the lobby and theater. To a minor extent there is a cross-traffic problem created by the park office doors against the east wall. Congestion also occurs between people using the drinking fountain, register, and computer display, and those entering or leaving the theater.



Figure 1-86. Hall (102), April, 2000. A number of visitor functions in this small space, including computer, drinking fountain, and stamp station, tends to jamb circulation between the lobby and theater. (AWO, SCBL 03-16).



Figure 1-87. **Updated finishes in the Hall (KAC, 6/16/2015).**

Ranger Office 104

This space was constructed as part of the Visitor Center tower, and has always functioned as a ranger office. It is located in the fulcrum point with respect to the Visitor Center and the park. Current activities within the room include the park ranger office, manning the visitor contact counter, monitoring the bluff road access point, first aid station, credit card scanning, park radio base station, and securing fee money. The office provides space for two rangers and as many as six seasonals during the visitation

high season (Figure 1-88). The office contains a counter top desk, four two-drawer file cabinets, weather station, permits fee computer, laminator for park passes, credit card scanner, base station, typewriter, and about ten lineal feet of built in book shelves. First aid equipment is stored in a small cramped closet in the hall (106), and hand set radios are kept in a cubby hole opposite the closet. The safe is tucked beneath the tower staircase. **The typewriter has been removed and some of the furniture rearranged but the space generally contains the same furnishings.**

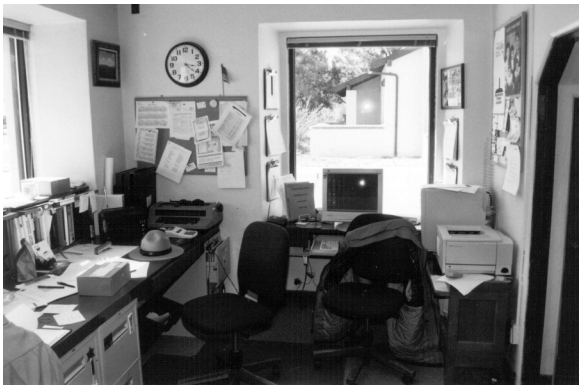


Figure 1-88. Ranger Office (104), April, 2000. This view to the west shows the crowded conditions in a space normally occupied by two full-time employees and as many as six seasonals. (AWO, SCBL 03-20).

In terms of fabric little has changed since construction. The room yet retains its plaster wall finishes and darkly-stained, cross-beamed ceiling. The tower wooden staircase remains intact (Figure 1-89). Changes include the replacement of original wood casement windows with fixed aluminum, and replacement of a vertical plank, Dutch door separating the lobby from the office with a saloon-type door. The floor is carpeted. All finishes appear to be in good condition, though the wood base is worn in places.

According to employees lighting and temperature control are good.

Overcrowding is the chief complaint of this space, especially during the summer. The high quantity of tasks performed within the office often leads to confusion and congestion. Although Association sales functions should be separate from park functions, the two overlap here. Because of congestion the park ranger has no quiet space to complete day-to-day office assignments. Visitors seeking first aid are in full view of a supposedly secure area. The office does not meet accessibility codes.

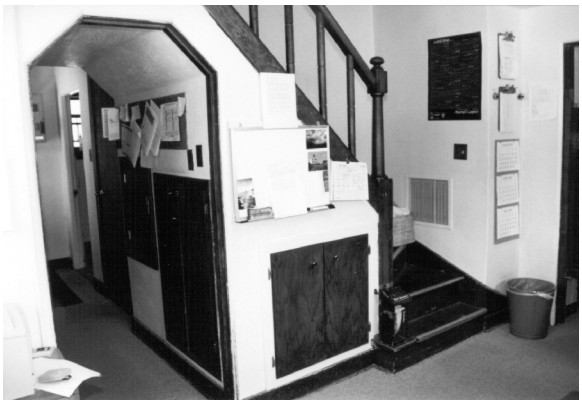


Figure 1-89. Ranger Office (104), April, 2000. The tower staircase is seen in this view to the northeast. Cabinets beneath the staircase house a safe and park radios. (AWO, SCBL 03-21).

Employee Restroom 108

This space was constructed with the 1937 Landmark Room addition, and serves as the only restroom within the Visitor Center. The restroom is principally used by employees. The facility is occasionally used by disabled visitors as the public restrooms are inaccessible, but the room does not meet accessibility standards. Refer to Accessibility Assessment for details on this room. This room no longer serves as the accessible restroom for the park, as new restrooms

meeting accessible design standards were constructed. Finishes in the Employee Restroom include 1" x 1" tile flooring with a coved base, a vinyl wainscot, and painted plaster walls and ceiling.

Closet 109

Until April 2000 this space housed a soda machine accessible to the general public. The machine was moved to the amphitheater to keep food items out of the exhibit rooms. An accordion door was installed and the enclosed space is now used for storage. The plaster and lath wall system is visible on the east wall where it was damaged by work for the drinking fountain located in the Hall.

Theater/Landmark Exhibit 110

The Landmark Room was built to display the geologic and paleontological history of the Scott Bluff region. While the room continues to serve as such, it now also doubles as a 36 seat theater. The room features exhibit wall-mounted cases, a projection booth that also doubles as a baffle between the hall (103) and the theater, and a unfixed screen (Figure 1-90). There is a small amount of visual equipment storage in the booth. **The theater function has been removed from this room, along with all the related equipment and project booth. It now serves as sales display space with shelves located in the center of the room. The wall mounted exhibit display cases remain intact.**



Figure 1-90. Theater (110), April, 2000. The 36 seat theater also functions as exhibit space. Exhibits cannot be viewed while a program is in progress. Note the suspended ceiling concealing finished timber trusses in this view to the north. (AWO, SCBL 04-4).



Figure 1-91. **Restored ceiling finishes in the Landmark Exhibit Room (KAC, 6/16/2015).**

All original interior finishes are concealed from view by contemporary constructions. In 1962 windows were sealed to make way for new exhibit cases that reach nearly to the ceiling. As in the History Room (102) a suspended ceiling was installed during the 1970s. Examination of the ceiling cavity confirmed the existence of finished timber trusses in apparent good condition. **A project in spring 2015 removed the suspended ceiling and restored the space to the original design intent with the exposed trusses. Per park**

staff, the fiber board panels between the roof trusses were removed, insulation was installed above them, and the panels were reinstalled. The floor is carpeted. **New pendant hung light fixtures were installed when the ceiling was restored.** Additional lighting is provided by exhibit case fixtures.

Cases exhibit fossils, Plains Indian artifacts, and geologic specimens sampled at the park. Exhibit cases are well past their prime. According to the park some of the displayed items are not from the Scotts Bluff region. One case displaying a fossil skull tested high for the presence of radon according to the park (see Hazardous Materials).

Office 112

This office is a portion of the 1938 adobe addition to the Museum Building. The office served to provide space for early park rangers and administrators. Presently it houses the park historian and resource manager (Figure 1-92). The historian occupies a small desk against the north doors and a file cabinet. The resource manager retains the remainder of the space with two desks, a computer desk, three file cabinets, a credenza with bookcase, and a very large bookcase cabinet against the south wall. Employee cross traffic through is generated by a circulation route to the second basement stair.



Figure 1-92. Office (112), April, 2000. Two employees are housed in very crowded conditions in this view to the east. Employees must pass through this office to access the basement staircase at the rear wall right. (AWO, SCBL 04-8).

Spartan finishes reflect the utilitarian nature of the space. Walls and ceilings are plastered and the floor is carpeted; all appear to be in good condition. **The ceiling is now in fair condition with cracks in several locations.** The panel door set (111-D1) at the head of the stair is original to the 1938 addition, but it has been modified at the Hall (103) face to match surrounding finishes. Wood casement windows were replaced with fixed aluminum units. Lighting is furnished by a pair of contemporary fluorescent ceiling fixtures, and an ample amount of natural light through north-facing windows.

Some of the existing crowded and chaotic conditions in this space can be solved through more efficient furniture arrangement and relocating and tossing old files and materials. **Furniture has been replaced and rearranged so the space appears less chaotic.** The office is not disabled accessible (see Accessibility Assessment), and the basement stair cannot be considered as a viable means of egress (see Life Safety Evaluation).

Office 113
Initially, this office housed the site superintendent. The office currently provides space for the park chief ranger. Office equipment includes a desk, computer desk, file cabinet, credenza, typing table, and bulletin boards. Finishes are the same as in Office 112. Wood casement windows were replaced with fixed aluminum units. The two panel door is the only intact and untouched example of an early door in the building. Lighting is provided by a single ceiling fluorescent fixture and two windows. The space appears adequately-sized for its purpose, although the door must remain open to ensure adequate heating and cooling reaches the space. **Per the Park, in 2015 the chief ranger moved to the 1938 Residence and the cooperating association business manager moved into this office.**

Jackson Exhibit Room 115
This space has been dedicated to the display of drawings and paintings by William Henry Jackson since its 1949 construction. From time to time changing displays are erected in the middle of the room. In addition to the Jackson displays, there are two dioramas in part dating to the 1935 Museum Wing exhibits and two glass-encased display tables (Figure 1-93). The dioramas do not fit with the Jackson collection, but are popular with children according to the park. When the Jackson Wing was constructed a time capsule is said to have been placed within the brick wall at the southeast corner.

This room has been converted to the theater room and all of the walls that projected out from the exterior walls to provide extra display space have been removed. A large television at the east wall is used to show the park's video and several rows of freestanding chairs in the center of the room are oriented in that direction. Walls retain the historic board finish, now painted instead of stained, with a section of new fabric infill in the middle of the wall which is used for art display. Art from various artists is mounted to the wall. The dioramas are extant at the east wall on either side of the television. Ceiling finish is modern wood boards with a dark stain and the flooring is carpet.

While the exterior matches that of the neighboring Museum Wing the interior has always been plainly finished. All walls, save the east wall, are of wallboard or plaster, and the latter of painted brick. A suspended acoustical ceiling was installed probably about the same time as the other two galleries. According to construction drawings the original ceiling was intended to be plastered and include a deep wooden crown mould. This has yet to be verified. The floor consists of carpet over concrete slab on grade.



Figure 1-93. Jackson Room (115), April, 2000. The panel exhibit walls seen in this view to the southeast were installed when the Jackson Wing was constructed in 1949. The suspended ceiling conceals a plaster ceiling with redwood trim. (AWO, SCBL 03-10).



Figure 1-94. Jackson Room now reconfigured to serve as the theater (KAC, 6/16/2015)

Windows at the north and south elevations were sealed with construction of the exhibits and suspended ceiling around 1978. It is unknown if any portions of the windows and double louvers shown in the construction drawings remain intact. The east gable end window that was moved from the Museum Building to the Jackson Wing in 1949 remains intact, but concealed behind a false wall (see Windows).

A roll up steel fire door separating the Museum and Jackson Rooms was installed at the time the Jackson Wing was constructed. Park staff indicate that the door is never operated or even tested in fear that it may not roll back into place.

Environmental conditions within the Jackson Room are poorly controlled and balanced. When constructed in 1949, two supply air ducts were merely drawn up from the basement at the eastern corners of the History Room, and pushed through the brick wall. Return air is essentially the doorway between the two galleries. As a consequence, conditioned air hardly reaches the eastern-portion of the Jackson Room.

The valuable Jackson collection displayed in this gallery cannot be adequately monitored from the counter in the front hall. The way in which the displays are designed to maximize wall space also conceals visitor movement. The park fears that someone could grab an exhibit piece and quickly exit through the emergency door or have enough time to conceal the piece while leaving the primary entrance. The room is monitored during closed hours with motion detectors, and the emergency door sounds an alarm when opened at any time.

Uncontrolled environmental conditions, harsh lighting, and poor security sight lines prompted the park to display only duplicate works by Jackson beginning in 1980.[39] Many of the original displayed paintings showed signs of deterioration due to the poor environment. Occasionally one or two original Jackson pieces are displayed. **There is currently no original artwork by Jackson displayed in the space but there are seventeen prints of Jackson's artwork and photography on display. There are ongoing conversations about where the collection should be stored and displayed.**

Tower 201

The single room at the tower second floor is accessed by a steep winder-type stairwell from the ranger office (104) (Figure 1-89). According to the park historian the room was used for a time as a park ranger's living quarters, and as an office. Today it is used for miscellaneous storage for items such as park and local informational brochures, mailing tubes and envelopes, computer equipment, cash registers, and first aid equipment (Figure 1-95). There are approximately 230 lineal feet of shelves against the walls. **This room now functions as office space for park rangers and has two desks, along with multiple shelves**

39 Cockrell, 1983 Administrative History, 32.

for storage. The tower is not open to the public.



Figure 1-95. Tower Room (201), April, 2000. This space has been used as quarters, an office, and now general office storage. The room is unheated. (AWO, SCBL 04-1).



Figure 1-96. Tower Room with furniture reconfigured to serve as office space (KAC, 6/16/2015).

Finishes include plastered ceiling and walls and a wood strip floor all in apparent good condition. **A suspended ceiling with 2' x 4" tiles has been installed, along with ceiling fans. Carpet flooring was installed throughout the room.** A finished wooden railing surrounds the stairwell, and a finished plywood hatch covers the stair at the second floor level. The space has minimal electrical power and lighting, and is not heated or cooled. Most lighting is provided by windows at the north and west walls.

Amphitheater

Although not specifically deemed an interior space, the amphitheater none-the-less is an integral part in the presentation of the Oregon Trail story to visitors. Some form of outdoor presentations have taken place on special occasions since construction of the Landmark Room in 1938. At that time the ell formed by the two building wings, in combination with adobe garden walls at the east and north elevations formed an enclosure.

Over time most of the garden walls collapsed and were replaced by wooden fences, and a more formal stage, fire pit, and screen followed in 1958. A forty foot length of adobe wall remains intact at the east enclosure. Equipment within a small projection booth added in 1988 can be remotely controlled from the screen area. Seating for approximately 200 persons is provided by wooden benches fixed to the ground. Seats are oriented to take full advantage of the view to the bluffs to the north and west, but the large screen hinders some of the view. The grade is covered by loose pea gravel over broken asphalt paving.

According to the park the amphitheater has been used during summer months for Thursday evening special programs. An average of 70 people attend each program; most are from the Gering and Scotts Bluff area. According to the park program attendance has slowly receded over the years. Occasionally, special permits are issued for weddings and Easter services.

The amphitheater can only be accessed from two exterior gates. The only access directly

from the Visitor Center is through a doorway passing through a private park office.

Public Restrooms
This small, utilitarian building provides the only public restrooms in the entire park. **A second building, containing a men's and women's restroom was constructed in 2013 just north of the original restroom to provide accessible restrooms for the park.** Constructed in 1938 of adobe, the building is separate from the Visitor Center, yet an integral part of its operation (Figure 1-97).



Figure 1-97. Public Restroom Building, April, 2000. The public restroom building, seen at right in this view to the northwest, was constructed prior to addition of the Jackson Wing. The facility does not meet accessibility standards. (AWO, SCBL 01-0).

Fixtures, water closet partitions, and plumbing have undoubtedly been replaced over the years, but its basic function remains intact. The last major rehabilitation of the building's plumbing may have occurred in 1966.[40]

Interior finishes include ceramic tile floor and plaster walls and ceilings in each restroom. A wood frame plumb wall with a two foot wide cavity separates the two restrooms. Each restroom is heated by an electric radiant unit, and ventilated during warm months by opening windows and doors.

In general the building is in good condition, but the restrooms fail to meet accessibility standards (see Accessibility Assessment). Accessible restrooms are now provided in an adjacent building.

Plumbing Systems

When initially constructed well water was supplied to the complex. Contamination of this water supply during the early 1960s prompted installation of water chlorination equipment in 1964.[41] Between 1964 and 1983 the well was abandoned in favor of city water service. Most of the water distribution system and fire hydrants were replaced in 1984. The water distribution system within the Visitor Center has been upgraded from time to time and is in good operating condition.

There is a small amount of plumbing within the building. There is an employee only restroom on the main level with a water closet and lavatory and non-functioning shower. Also, on the first level is a public drinking fountain that was recently installed. In the basement is a small break room with a kitchen sink. There is also a hose bib on the south side of the building.

The sanitary lines serving the restrooms on the main level are visible in the basement ceiling and are low in order to route under the structure. The main waste line exits the building under the kitchen sink.

Waste from the entire complex is piped to a leach field located about 100 feet northeast

40 Cockrell, 1983 Administrative History, 63.

41 Cockrell, 1983 Administrative History, 61.

of the Visitor Center. According to park maintenance staff the system is in good condition, but will need to be inspected.

A sump pit and pump and a floor drain was installed in basement room 002 in 1962.[42] Air conditioner condensate lines currently run to the pit, but it is unknown if there was another motive for its installation. According to the drawings water is discharged outside of the south window well to grade.

Fire Suppression

Except for hand-held fire extinguishers, there is no fire suppression system in the Visitor Center.

Heating/Cooling Systems

The Visitor Center retains much of the forced air distribution system that was installed with the various construction phases. Furnaces were fueled by propane gas until a conversion was made to natural gas in 1990 at the time the existing high efficiency, dual furnaces were installed. The distribution is single zone, and air is filtered at the units. Galvanized steel ducts exposed to view are not insulated and the joints are not sealed. Supply and exhaust flues consist of PVC pipe drawn up the old masonry chimney stack. Air conditioning was first introduced to the building in 1957. Condensers are located within a fenced area north of the Jackson Wing.

The existing single zone distribution system is unbalanced and conditioned air does not reach certain areas of the building. The Jackson exhibit room relies upon the doorway to the Museum exhibit room as a return air port. Conditioned air consequently does not efficiently reach the east end of the Jackson room. Insufficient cooling is noted with particular regard to the theater (110) during the summer. The cooperating association business manager (113) apparently receives no direct conditioned air. According to park maintenance staff because very fine dust enters the building, public spaces must be dusted every other day.

There is no source of outside air ducted into or introduced to the furnace system.

The Collection Storage 012 room contains a 4" vent that is routed across the corridor, to the outside of the building, to exhaust the room. There is evidence that the room once contained a humidifier system for the collectibles. There is a humidify tracking logger as well as a humidistat mounted on the room.

Electrical & Lighting Systems

Infrastructure

Roosevelt Public Power District (RPPD) is presently the electrical utility provider, with the incoming underground primary electrical services with the main distribution gear located at the Maintenance Building. Refer to the 2016 Cultural Landscape Report for more information.

42 "Installation of Sump Pump, Administration Building, Scotts Bluff National Monument," NPS Drawing No. NM-SB 2501-N, 8 May, 1962.



Figure 1-98. Transformer, June 2015. The pad mounted 45KVA, 208/120V, 3-Phase transformer is located at the Maintenance building, at the exterior wall of the Northeast Bay along the North wall, approximately 4 feet from the corner (JB, 6/15/2015).

This utility transformer serves a kilowatt hour utility meter (#55-448-768) and the main panelboard mounted in the Maintenance Building northeast bay along the north wall. Refer to the Maintenance Shop section of this report for more information on the main distribution.



Figure 1-99. Existing Main Utility Meter (JB, 6/15/2015).

According to the park the existing electrical power is **insufficient** for current requirements, **with breakers tripping throughout the facility.** The main panel and three sub-panels have been installed within the past two decades. Occasional, storm-induced power outages are of short duration according to the park. The electrical distribution system has been modified over the years, **and some modifications have fostered existing code violations. Refer to the Maintenance Shop section of this report for more information regarding the main distribution panel and the overall one-line diagram for the facilities. A 50 amp 2 pole breaker originally serving the Visitor Center is no longer used. Instead, it is bypassed by a double tap ahead of the 400 amp Main Breaker in the distribution panel to service the Visitor Center through an underground feeder.**

The existing underground feed is routed through a 150 amp 3 pole fused disconnect then routed to Panel 'A' located within the basement. The panel is a Schneider Electric QO load center, 36 circuit, 150 amp, 208/120V, 3 phase panel. Loads indicated on the panelboard directory include a 100 amp 3 pole service to the comfort station, electric heat, general lighting and outlets, electric water heaters, electric water cooler, and it appears that all but one of the breakers are currently in use. The service ground for this panel includes a single copper ground extending from the panel out to grade and into a single ground rod. It appears there is an existing double tap at Panel 'A' which serves the exterior Amphitheater kiosk. Additionally, there is a second double tap at Panel 'A' to serve an adjacent Panel 'B' located on the same wall. Panel 'B' is a Schneider Electric QO load center, 16 circuit, 100 amp 2 pole, 240/120V, single phase panel. Loads indicated on the panelboard directory include service to the entrance kiosk, the electric gate, and general lighting and outlets.



Figure 1-100. Existing Visitor Center Panels 'A' and 'B' and associated disconnect, June 2015. Existing Panels are located in Sales Storage #007 (JB, 6/15/2015)

Branch Circuits

The majority of the existing branch circuit wiring in the basement panel is contained within steel, EMT, conduit. Exposed wiring within the basement along the ceiling are primarily enclosed in EMT. It appears that once cabling is routed up from the basement, it transitions into standard non-metallic sheathed cabling enclosed in wiremold. There are a few locations within the basement enclosed in wiremold as well. All branch circuiting appears to vary in age, likely added in parts and pieces with the different remodels over the years. Branch circuits provide a separate ground conductor such that the general outlets are the three pronged type with a ground connection available. Multiple non-metallic sheathed cable installations were observed which did not have proper NEC required support spacing. With the current office layout, overall loads are cause for concern.

General Power Outlets and Equipment

Typical throughout the Visitor Center, 15 and 20 amp duplex outlets, and the occasional 15 and 20 amp quadplex outlets exist. Most of the existing locations are surface mounted with surface mounted conduit or wiremold. Receptacles are typically mounted low on wall, above existing baseboard molding.



Figure 1-101. Existing typical duplex device installation, surface mounted with surface mounted wiremold (JB, 6/15/2015)

Additional receptacles appear to have been added as needs have arisen for more office spaces, or specific uses, for example the receptacles for TV/audio conferencing and a ceiling mounted projector in the basement. One exception is the existing kitchen, located in the basement, has few receptacles, all of which appear to be non-GFI protected. While devices have been added, common use plug-strips were observed to be used in abundance throughout the building.

Lighting Systems

Most of the historic light fixtures were replaced by fluorescent, **LED,** and track-mounted fixtures since the 1970s as a result of exhibit and office rehabilitation work. Historic decorative fixtures include the lobby (101) chandelier, and exterior, incandescent craftsman-style sconces at door 106-D1 and each of the public restroom doors.

Lighting within offices is somewhat adequate **utilizing combinations of surface mount**

wrap-arounds, recessed troffers, and direct distribution pendant mounted fluorescents, but lighting conditions within public areas is harsh, uneven, and poorly focused. According to the park, visitors frequently comment on poor lighting conditions, particularly in the sales area. Visitors entering the lobby (101) directly from the bright, sunlit exterior suddenly encounter a space dimly lit by only the decorative chandelier. Visitors must usually take time for their eyes to adjust to the interior light levels before orienting themselves to the interior layout.

High ultraviolet light levels in the Jackson room was the primary reason that no original Jackson works are currently displayed. Lighting controls for the exhibit areas have always been concentrated in a recessed panel at the west wall of the lobby (101). These controls can be accessed by the public. Controls for Jackson room (115) ceiling fixtures are located seven feet above the floor.

Some LED lighting has been implemented within the display cases in the exhibits.

Many of the interior spaces have been updated to utilize local occupancy sensor controls. Local switches in areas such as the basement control multiple rooms, as opposed to individual room controls.

Emergency egress fixtures are present within the Visitor Center, in each of the exhibition spaces, the large office area, and the basement corridors. When tested, three out of five were operational. Egress lighting was notably missing from the rear stairwell.

Lightning Protection

No lightning protection is installed on the building, and there is no surge protection on the electrical system.

Communication, Fire & Security Systems

Telecommunications

As described in the 2015 Cultural Landscape Report, telecommunications provided by Century Link are provided to the site from the utility pedestal, entering at the northeast side of the Visitor Center. The main server is located in the basement of the Visitor Center, in storage closet #002. No fiber service is provided to the site, however fiber is present for service from building to building, routed underground. According to the park the existing phone system is adequate for employee use.

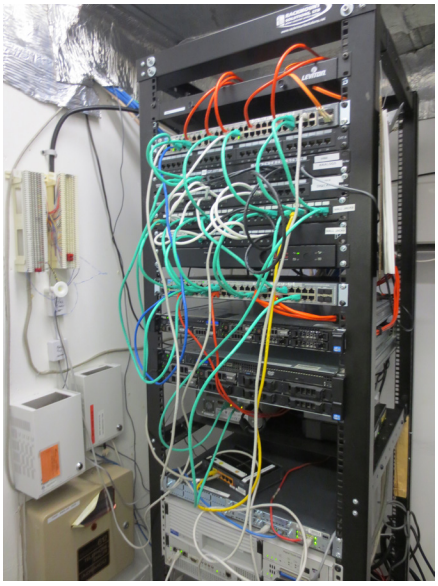


Figure 1-102. Existing server rack, Visitor Center basement (JB, 6/15/2015).

Fire Alarm and Security

The fire alarm system was installed in 1975 and improved in 1990.[43] **The existing fire alarm system extent was observed and appears to be missing some coverage per National Fire Protection Association (NFPA) 72 Sections 7.5**

43 Cockrell, 1983 Administrative History, 64.

and 11.5. Existing detectors consist of hard-wired smoke and rate of rise devices, **with some more recently added combination carbon monoxide/smoke detectors in smaller storage spaces. limited horn/strobe notification was observed throughout. Exterior doors all appear to have pull stations present.**

The intrusion detection system, installed in 1990, consists of **wall mounted** motion heads in the collections area, exhibit rooms, and primary entries. **Cameras are located within all three spaces occupied by the visiting public including one at the main entry. Additionally there is one exterior camera located outside the main entry.** Control panels for each system, located at the north end of hall (106), operate on a dialer system. The control panels are a hindrance to door 106-D1 and restroom (108) accessibility (see Accessibility Assessment).

Hazardous Materials

Landmark Environmental performed hazardous material testing on the building in 2016, see full report in appendix.

Basement areas and certain exhibits tested for the presence of radon revealed that one exhibit case in the Landmark Room (110) had high levels of radon due to off-gassing from a large fossilized skull. **Testing done by the NPS revealed high levels of radon in the Collections Room (012) and time restrictions are in place for employees accessing the space. Landmark placed four radon sample canisters in the Visitor Center basement to sample radon gas over a 48-hour period. Canisters were then evaluated in a lab and analytical results ranged from 4.6 to 7.2 picocuries per liter (pCi/L). EPA residential recommended limit is 4 pCi/L.**

A small section of asbestos pipe insulation was sealed in the ranger office (104). **Acoustical surface texture above the newer wood panels in the Jackson Room tested positive for asbestos. Acoustic containing resilience flooring may be present beneath carpeted, sheet vinyl or tiled flooring throughout. Testing of roofing materials was not within this scope but roofing felts below the wood shingles could be found to be asbestos containing materials.**

Landmark Environmental tested for lead paint and none at the Visitor Center contained greater than 0.5 percent lead, which would classify them as a lead based paint. Soil was also tested and lead levels, where found, were under regulatory limits.

Hanta virus was detected in six of 100 mice sampled near the Visitor Center in 1994. The presence of mouse activity above the basement conference room suspended ceiling precipitated a cleanup of that space in 2001. **Landmark Environmental observed apparent mouse droppings behind a cellar access door in the basement but no evidence of pest intrusion or indications of accumulated rodent or bird feces. On-site personnel were not aware of any significant signs of pest intrusion or animal droppings.**

Landmark interviewed personnel on-site who could not relate information specific to the former location and/or removal of historical Underground Storage Tanks (USTs). Representatives at the site were, however, able to provide information specific to the removal of four oil-fired furnaces and the conversion of the existing HVAC system to natural gas in late 1990. Landmark then checked the on-line records for USTs on both the Nebraska State Fire Marshall and the Nebraska Department of Environmental Quality (NDEQ) websites. The Fire Marshall's website indicates that four USTs

were removed from the National Monument; however, no information regarding specific locations, contents or date(s) of removal was available on line. A facility ID number, 7019, was provided. The subject property and ID appear on the NDEQ list of leaking USTs (LUSTs). The data provided does not specify the number of USTs, but does indicate contents as diesel and gasoline and a discovery data of October 11, 1989. The incident status is indicated as "no further action – closed". In summary, available data indicate that USTs were present on the site and were registered with the state. In addition, a LUST incident did occur in 1989, after the promulgation of UST regulations, and was managed to the satisfaction of the regulatory agency, such that a "no further action" determination was made.

Archeology

There are no recorded prehistoric or historic features or sites in the immediate confines of the Visitor Center complex.[44] Archeological deposits have been detected in various locations of park grounds. **The Midwest Archeological Center has an inventory of cultural resources throughout the park. See the CLR written in conjunction with this report for a summary of known sites.**

Accessibility Assessment

According to the park, six to ten wheelchair users visit the site during summer months, and about one per month during the off season. Once past the parking lot the Visitor Center, disabled visitors encounter a number of barriers that impede their use and enjoyment of the site. In summary, there are no accessible restrooms on site for public and employee use, and all Visitor Center offices, the library, building entrances, and the visitor contact counter are not accessible under current standards. **In 2013 an accessible restroom was installed, however the remaining issues have not been addressed**.

Site

Parking and sidewalks to the Visitor Center and public restroom building comply with current standards. **See the 2015 CLR for more detailed information.**

Doors

The primary public entrance into the Visitor Center, door 101-D1, meets width and threshold requirements. However, persons using wheelchairs or other assistance devices usually require help to open the heavy door to enter or exit the building. Two reasons for the required assistance include, a strong opening force is required, and the visitor contact counter does not provide the required twelve inch clearance for pushing the door open at the latch side.

Employee entrance door 106-D1, does not meet standards on several counts. The exterior screen door requires excessive force to open and the threshold exceeds the standard ¾ inch height and slope. For a side approach at the interior the present hall 106 does not meet the minimum requirement of 48 inch width. While the door exceeds clear opening requirements, operation is hindered by security panel boxes on the north hall wall. This hindrance in turn partially blocks entrance to the employee restroom 108.

Emergency egress door 115-D1 does not meet the minimum 32 inch clear width opening. The double leaf door 112-D1 meets no accessibility standards due to the stairs, and blocked door.

44 Midwest Archeological Center Archeologist Bruce Jones to Alan O'Bright, email message, 20 June, 2000.

The Visitor Center fails to meet the minimum standard for at least one accessible entrance into the building.

Accessible Routes
All routes within Visitor Center exhibit rooms meet accessibility standards. The hall (106) use by employees only does not meet requirements for minimum passage width. Congestion is also caused by the frequently-used stair doors swinging into the hall.

Positioning of the visitor contact counter does not provide minimum clearance for disabled employees attempting to service the counter or enter ranger office 104. Door 104-D1 fails to meet the minimum clearance width opening. In summary, the ranger office is inaccessible according to the standards.

No elevators exist within the Visitor Center. Therefore, all basement rooms including the conference/library room, employee break room and kitchen, sales office and storage, and collections storage fail to meet accessibility standards with regard to the public and employees. Offices 112 and 113 do not meet the standard for accessible routes due to the stair barrier. The library specifically is considered open to the public by permission, but fails to meet the standard.

Visitor Contact Counter
The existing visitor contact counter exceeds the required minimum height for service counters, which require that an auxiliary counter of a maximum 34 inches in height be provided.

Stairs
All stair sets within the Visitor Center are constructed of concrete and have not been modified since construction of the building. All stair sets fail to meet the required 11 inch tread depth. Although each of the stairs feature uniform risers, stair 114 exceeds the recommended maximum height of around 7½ inches.

Restrooms
The Comfort Station fails to meet accessibility standards on numerous counts. The sidewalk approach to the women's room does not meet requirements as an accessible route due to the constricted nature of passageway between the buildings and garden wall. The doors are extremely narrow and do not meet minimum maneuvering clearances. The interior of each room does not meet maneuvering requirements, and there are no accessible toilet stalls, urinals, and lavatories. **The new restroom building meets accessibility requirements for approach, maneuvering requirements and accessible fixtures.**

The employee restroom (108) fails to meet the standards in several areas. Exterior door 106-D1 does not provide an accessible route (see Accessible Routes). While the restroom door meets opening requirements, the passageway to that door is partially blocked by the door 106-D1. Full extension of the exterior door is blocked by security panel boxes protruding from the north wall of hall 106. The door latch side of 108-D1 does not meet the minimum clearance requirement of 12 inches. The restroom fails to meet minimum wheelchair turning requirements.

Drinking Fountain
The only drinking fountain available on site to the public and employees is located in hall 103 of the Visitor Center. The fountain does not meet accessibility standards.

Exhibits & Sales Area
Most exhibits in the Visitor Center were installed prior to legislation of accessibility

standards. Many exhibits, and particularly the text cards, may be difficult for most disabled persons to view or read. Light conditions of some exhibits are spotty and uneven. **An ongoing separate project to redesign the exhibits should address these accessibility issues.**

Arrangement of sales shelves is very restrictive and does not allow wheelchair users the opportunity to turn or maneuver. A wheelchair user within the confines of the sales shelves virtually precludes other people from occupying the space. **Sales shelves have been relocated to a new room and are spaced further apart than before to provide clearance for maneuverability through the shelves.**

Accessibility Summary

Site parking and circulation surrounding the Visitor Center are essentially the only accessible areas of the complex. While primary exhibit spaces within the building are accessible, the routes to them are not. According to the ANSI standards, disabled persons must have unassisted accessible routes. **There is an accessible men's and women's restroom in the park.** While some minor items can be corrected to meet the standards, major work will be required to bring the building up to standard.

Life Safety Evaluation

Nebraska and the Denver Service Center has adopted the 2012 International Building Code, 2012 International Existing Building Code, and 2012 International Residential Code.

The Visitor Center is a one-story, adobe and brick building with a wood framed roof. The first floor structure is concrete. The existing building has a partial full basement and a partial second floor in the "tower".

Occupancy
B
A3
S

Construction
IIIB non-sprinkled

Floor Area

Basement	**2386**
First Floor	**3770**
Second Floor	**266**

Egress

For Exhibit 110 a minimum of two exits are required for the room. At present there is only one exit passing through hall 103 and lobby 101. The theater (formerly in room 110) has been moved to Room 115, a room which does provide two exits; one through Exhibit 102 and Hall 101 and an emergency exit directly outside through door 115-D1.

The exhibit areas are rooms 101, 102, 103, and 115. A minimum of two exits are required. Current exits at doors 101-D1 and 115-D1 satisfy this requirement.

For first floor offices the minimum requirement of one exit is required. Current exits satisfy this requirement provided that door 112-D1 is kept clear of office equipment.

For the basement offices the minimum requirement of two exits is satisfied by the code. The travel distance from conference room 002B to door 112-D1 is less than the maximum of 150 allowed by the code. However, the path from stair 114 through office 112 to egress door 112-D-1 must remain clear of office furniture and equipment, and the door must remain unlocked during normal business hours with posted signage. The

basement window escape hatch at office (011) does not qualify as a means of egress.

Corridors

There are several deficiencies in existing hallways in the building. A five foot length of hall 106 does not comply with a minimum corridor width of 36 inches. The swing of door 107-D1 projects within that same hall well beyond the maximum 7 inches allowed by the code. Hall 006 to Storage 013 is 35 feet in length. Per code in non-sprinklered buildings, dead end corridors are limited to 20 feet in length.

Basement corridors comply with width but not height requirements. Substantial ceiling projections within halls 004 and 006 measure almost one foot less than the 7 feet minimum required by code for corridors. Large ducts and plumbing pipes are the primary protrusions.

Stairways

All stairs exceed the required 36 inch minimum width. While handrails on stairs 107 and 114 meet the requirements, there are no handrails on stair 111. All handrails are missing the minimum required extensions at the top and bottom of all stairs. Stairs 107 and 114 fail to meet the maximum required riser height of 7 inches and minimum tread depth of 11 inches. Stair 111 has a uniform riser height 6 inches which is allowed by the code, but the 10 inch tread depth does not comply. Stairs 111, 114 and 107 do not have the 48" landing clearance at the top of each stair.

Existing Space Analysis

Built decades ago during a period of low visitation, it is obvious that contemporary visitor loads and demands have far outpaced the inelastic space offered by the Visitor Center. Expansion into the basement may have relieved some of the pressure, but these areas were not initially intended for office functions and consequently provide spaces not in compliance with contemporary building codes and egress standards. As time progressed spaces were delegated multiple tasks. This has led to a diminished visitor experience and crowded employee working conditions.

Visitor Contact

The lobby (101) is the first space visitors see upon entering the Visitor Center. The lobby is also a focal point of visitors circulating between the theater and exhibit areas. Visitor egress is impeded by the contact counter that is pushed to the edge of the entrance door. Lines forming at the counter by visitors seeking information or purchasing sales items are a hindrance to free flow of traffic in and out of the building. Additional crowding is caused by sales items displayed on walls and the corner bench.

In the hall (103) lines forming at the display case, computer display, and drinking fountain impedes the flow of visitors between the lobby and theater. Dark wall paneling also implodes the perceived size of this space. **This space has been updated with white finishes and more light fixtures so the space no longer appears small. The computer display and display case have been removed so traffic can flow more freely through the space.**

Exhibit Spaces

Overall, exhibit space appears adequate to interpret the story of the Oregon Trail and related issues. However, multi-tasking of

those spaces has led to crowded circulation and diminished presentation of the actual exhibits. In the Landmark Room (110) lights must be extinguished every half hour for slide presentations, eliminating any chance of visitors to view the exhibits. There is no sound barrier to noise filtering from the lobby and hall into the theater during presentations. The projection window is so low that the heads of seated visitors frequently intrudes on the presentation. **These issues have been addressed by relocating the theater to room 115.**

The sales area is located in the middle of the History Room, pushing circulation to perimeter exhibit cases and occupying space that might have been used for exhibits. Lowered ceilings in the three exhibit rooms also add a touch of claustrophobia to the already crowded spaces. **The sales area is now located in what was the theater room but it does still occupy space that will be used for exhibits. Ceilings have been restored to their original configuration of exposed trusses.** Visitors are also shunned from viewing anything to the outside as all windows have been sealed.

Exhibits are deemed well beyond their prime. The only interactive computer exhibit is not accessible. **Exhibits are being redesigned under a separate contract and this update should address these concerns.**

Sales
The sales area within the History Room (102) can only accommodate a few visitors at a time. Display shelves and racks must be turned in rather than out toward the exhibit cases so as to protect the free flow of traffic around the sales area. **Sales shelf arrangement and location has been revised to address some of these issues.** According to the park, the Oregon Trail Museum Association frequently complains of the lack of display space in the Visitor Center.

The basement sales office and storage areas are remotely located from the sales area. This prevents Association employees from manning the sales register and with direct access to the office. The sales office can best be described as a hole in the wall. Storage rooms are organized but crowded. There are no security locks on the doors; the sales office has no door.

Public Restrooms
Public restrooms are in a building separate from the Visitor Center, and are not accessible (see Accessibility Assessment). **New accessible restrooms were constructed just north of the original restrooms.**

Offices
Offices within the Visitor Center are characterized as cramped and cluttered. Cleaning out old files and manuals, removing redundant office furniture and equipment, and reorganizing furniture and equipment that remains could provide additional space. But the fact remains that too many employees are crowded into spaces that were designed for only a few. Tasks within those offices have become more complex and diversified over time. The quantity of park files and manuals increases with time resulting in occupation of vital space with file cabinets. During the peak summer visitation period incoming seasonal employees have no space for personal articles.

The ranger office (104), focal point for many activities, is especially overcrowded during the summer. This area that should be secure is open to access by Association employees, and at times by visitors seeking

minor first aid. None of the Visitor Center offices are accessible for people with mobility impairments.

Conference/Library
The approximate 5,000 item library collection outgrew its bounds decades ago. This necessitated the rehabilitation of what was essentially a basement furnace room for use as combination library and conference room. However, recent technological advances in concert with spatial constraints have prompted the park to locate their email server and an email station in this space. Audio visual equipment is stored in the open wherever it fits.

The room is characterized as sufficiently open for small meetings, but cave-like due to the very low ceiling and absence of windows.

Books are stored in steel, glass-faced barrister cases located along the walls. Since the furnace is only a single-zoned unit, temperature and humidity are principally geared for human comfort rather than book preservation.

According to the park the library is open to the public for research purposes, but the space is not accessible. The nature of the room and bookcases do not afford adequate security.

Due to activities at the park at the time of the site visit, the Conference Room was not set up in its usual configuration. There are ongoing discussions about where collections are to be kept.

Collections Storage
Enclosed by concrete and brick, the collections storage vault (012) is considered virtually indestructible. But the addition of artifacts over time has outstripped available space. There is no climate control within the vault, but hygrothermograph readings indicate that temperature and humidity are maintained at constant, ideal levels.

Employee Services
The employee lunch room and kitchen were carved out of space within the basement probably in the 1970s. Both rooms are out of bounds to wheelchair users. Ducts and pipes hanging from the ceiling prove to be a challenge to fairly tall people. The lunch room is so small that groups of employees must eat designated in shifts. The crowded conditions are also amplified by the fact that the table is in a direct line of circulation between the stair and conference room.

The kitchen is but a hole in the wall; only one person can occupy the space at a time. A sewer pipe is suspended directly over the stove and sink.

A single unisex restroom is the only one available to employees within the Visitor Center. The room does not conform to current accessibility standards.

Storage
What little storage available in the Visitor Center is completely full. As a result miscellaneous equipment, files, and manuals must be stored in offices out in the open or tucked away in whatever spaces are available. A small basement storage room (013) was intended to be a dressing room, but now is so packed with costumes and other interpretive gear that dressing is nearly impossible. Even residual space in the furnace room (003) is used as storage for folding tables and chairs.

Amphitheater
The amphitheater features wonderful

views of the bluffs to the north. The place is certainly functional for occasional special events, but underused. There is no direct circulation path from the interior except from private offices. The presence of fixed benches tends to preclude any event requiring open ground. The board fence, large screen, and concrete stage are not in keeping with the design of the building.

Existing Conditions Drawings

The following drawing set was developed using archived construction drawings, site plans, and field notes taken April 2000. These drawings are in AutoCAD. **Drawings were updated as part of this 2015 HSR update, see Appendix A.**

Significant Feature Identification

Overall, design integrity presides over material integrity in the case of the entire Scotts Bluff administrative complex. Elements of the Spanish colonial style for most of the present-day complex is by far the most important feature. Although not necessarily indigenous to western Nebraska, Spanish colonial design is traditionally rooted to the landscape by its sprawling construction and use of site-derived earthen materials. The style arranges buildings and garden walls to capture surrounding space, creating rooms without roofs. Traditionally, these outdoor spaces were used for everyday work and social activities, not unlike the use of the administrative complex today.

Visitor approach from the highway and view of the administrative complex from Scotts Bluff are important considerations. From the highway the complex is seen as a sprawling, low-lying series of structures that serve as a middle ground focus to the bluffs beyond. From the bluff top the complex appears as an oasis on the prairie, giving visitors a reference to scale, direction, and altitude they have traveled. Unfortunately, some of the design cohesiveness of the present complex has been compromised through replacement of adobe garden walls by wooden fencing, and addition of a free-form parking lot.

The arrangement of structures and circulation provides a gateway to the bluff monument. From the parking lot, vehicles are directed through a narrow channel between the Visitor Center at the east and the ranger quarters and maintenance facility at the west. Although an arm gate signifies this pass as a control point, the act of driving from the open parking lot, squeezing between building confines, and continuing into the open prairie imparts on the visitor that this is a special place.

The uniformity of scale in the entire complex is also an important consideration. No building within the complex is wider than twenty eight feet, and no taller than a one-and-one-half story residence, with the exception of the Visitor Center tower. Typical complex characteristics include the employment of shallow gable and shed roofs, deep-set windows against stucco walls, and low garden walls.

Specifically, the Visitor Center features linear wings uniformly twenty-two feet wide. The two story lookout tower that provides a fulcrum for the two wings furnishes a visual cue to the visitor entering the site as to the location of the primary entrance. Significant, typical design features include shallow-pitched roofs with overhanging eaves, exterior walls painted the color of the bluffs, and concrete grilled windows set high upon

wing walls. The few windows at office spaces are also deep-set but no longer operable.

Upon approach to the Visitor Center entrance the visitor is figuratively squeezed into the arched porch before entering the dark, tall-ceiling lobby space. Passing from the tight space into the larger space imparts a feeling that the lobby is larger than it actually is. Other unique, significant design features within the interior include beamed ceilings in Hall (103) and the Ranger Office (104), and the varnished timber trusses in the Landmark and Museum Wings.

To a certain degree the scale of interior rooms is also an important consideration. The initial design intent to provide above-average ceiling heights within the exhibit rooms imparts a degree of importance to the space.

While true adobe brick construction is unusual for Nebraska, its partial use in the case of the Visitor Center appears to stem from an economic necessity and not a indigenous design requisite. The dichotomy between the use of brick and adobe in this structure is of minor value as the designers chose to stucco the adobe and paint the entire structure a uniform color to tie the two materials visually.

In summary the principal significant features of the administrative complex include:

- Design integrity, or the sustained adherence to elements of the Spanish colonial style of construction.
- Appearance from the highway in terms of silhouette against the backdrop of the bluffs and continuity of a complex of structures spread into the landscape.
- Sustained design appearance from the bluff lookout.
- Gateway to Scotts Bluff.
- Uniformity of building scale and materials.

The principal significant features of the Visitor Center proper are identified as follows:

- Continuity with Spanish colonial design style.
- Uniformity of wing massing, scale, and balance.
- The use of shallow gable roofs with exposed eaves.
- Visual cues to the entrance including the tower and arched entrance.
- Uniformity in the use of materials including stucco walls, concrete window grills, and deep-set casement windows.
- The Lobby (101) that features a tall boarded ceiling, chandelier and painted brick walls.
- Ranger Office (104) featuring a beamed ceiling and tower stair millwork.
- Beamed ceiling in the Hall (103)
- Exposed timber roof trusses within the Landmark and Museum Wings.
- Interior exhibit hall room scale.

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Part 2: Treatment and Use

Treatment and Use

The recommended treatment for the Visitor Center and CCC Restroom is rehabilitation. Rehabilitation allows for altering or adding to a building to adapt to changing or continuing uses while still preserving the historic character.

Multiple additions were added to the Visitor Center during the period of significance but the layout has remained relatively unchanged since the construction of the Jackson Room addition. However, finishes have been replaced or damaged over the years and some character defining features have been lost or removed. The general recommended approach in this report is to repair damaged materials and finishes and leave undamaged surfaces in their current state whether they are historic or modern. Recommendations also include restoring hidden or missing character defining features. For cultural landscape recommendations, refer to the CLR produced in conjunction with this HSR.

This section also provides recommendations for design considerations to inform potential locations and massing for a future addition since the park space needs have outgrown the available space within the Visitor Center.

Recommended Treatments by Feature / Element

Treatment -- Architecture

Architecture - Roofing
Priority: **Minor**
New shingle roofing was installed on the Visitor Center during the writing of this report. Per discussions with the park, the dark stain historically applied to all wood shingles in the complex was not applied to the shingles prior to installation. This finish may be applied to just the top of the shingles to visually match it to the rest of the complex but having it on only one side can cause uneven stresses on the wood. Future roof replacement should call for the shingles to be dipped into the stain before installation. This same process should be followed for the CCC Restroom, since when it was last reroofed no stain was applied to the shingles.

Architecture - Flashing
Priority: **Serious**
Step flashing at the intersection of the Landmark Room east wall and Museum Wing room should be investigated. Any gaps allowing water into this area should be sealed.

Architecture - Gutters
Priority: **Minor**
No work is required at this time.

Architecture - Soffit
Priority: **Minor**
No work is required at this time.

Architecture - Exterior Walls - Stucco
Priority: **Serious**
Due to the extensive areas of peeling paint throughout the multiple layers on the Visitor Center, all paint should be stripped off the brick and the building repainted. Paint on the stucco is also peeling and extent should investigated. It may be possible to remove only the flaking areas and repaint the plastered portion of the building, however full removal and repainting may be needed to ensure adhesion of the new paint. Repainting with a permeable paint coating should be considered to allow rising damp to disperse better. If existing paint is not fully removed, then using a permeable paint coating would at least not contribute further to the existing issue.

Architecture - Beam Ends
Priority: **Minor**
No work is required at this time.

Architecture - Windows
Priority: **Serious**
Tower windows should be replaced with windows that match the historic configuration.

Windows in the exhibit spaces should be restored. The current wood infill should be removed and the original wood sash restored. A glazing with a UV film should be installed to return these spaces to their original character. Coordination with exhibit requirements for collection protection and visual comfort should be taken into consideration.

Architecture - Doors
Priority: **Minor**
No work is required at this time.

Architecture - Interior Finishes
Priority: **Minor and Serious**
Cracks in the second floor ceiling of the tower space appear to be caused by normal thermal movement and should be repaired and the ceiling painted.

Areas of original concrete flooring with a scored finish could be restored. This would require removing the current carpet finish and all adhesives. Experimentation with removal techniques/products should inform the process. Room acoustics should be taken into consideration with this recommendation.

Architecture - Code / Life Safety Issues
Priority: **Serious**
A fire sprinkler system is required per NPS Director's Order 58. The design team should ensure it is installed in a way that is not detrimental to the historic fabric.

The IEBC, International Existing Building Code, applies to the repair, alteration, change of occupancy, addition to and relocation of existing buildings. Within this code, work is categorized into Alteration Levels 1, 2 and 3 depending on the amount of work within the building. Additional categories include Change of Occupancy, Additions, Historic Buildings and Relocated Buildings. Requirements of the code are limited to work areas of the project Levels 1-3. This means that Alteration projects are not required to upgrade the entire building per current code, just elements that are within the project work area dependent on the nature of the alteration work. Change of Use projects trigger more thorough upgrades and the building must be brought up to current code requirements for the new use.

Architecture - Accessibility
Priority: **Serious**
Accessible access for visitors and staff must be provided. Provisions need to be made for accessible staff offices and spaces. Unique functions, such as break rooms, need to be on accessible routes so no staff member is precluded from using common spaces. Section 4.1.7 ABA requires that an historic building provide one accessible route from a site access point to the building entrance, one accessible entrance, accessible routes from the entrance to the public spaces on the level of the main entry, and an accessible restroom.

The main door opening is wide enough to provide accessible entrance if the opening clearance and the required opening force are addressed. A new exhibit design is being created under a separate contract and will provide accessible access to the main public spaces. An accessible restroom is provided.

NPS office space is located in the Visitor

Center and 1938 Residence. An accessible office space should be provided in the building which is best modifiable to accommodate it. Similarly, the information desk should be replaced or modified to accommodate both disabled staff and visitors.

Treatment -- Structural

Structural - Foundation
Priority: **Minor**
No work is recommended at this time.

Structural - Floor Framing
Priority: **Minor**
No work is recommended at this time.

Structural - Roof Framing
Priority: **Minor**
There are several recommended treatments regarding the roof framing.

Over the Lobby, replace the 4x4 dropped purlin with a dropped, plied LVL purlin. Support the ends of the purlins on stud packs atop the existing masonry walls.

Also over the Lobby, install framing clips that connect the rafters to the ridge board and shim over-framed rafter ends where they were cut to bear on the original roof but where small gaps exist.[1.1]

At the heavy timber trusses over the exhibit area, tighten the steel rods so as to close the gaps between the let-in web members and the chords. Where gaps cannot be completely infilled, restore full bearing by filling with wood epoxy. Also, inspect the 6x10 ridge beam that spans between trusses to ensure that it is fully seated in the steel shoe.

Structural - Wall Framing
Priority: **Minor**
Cracks in the brick and adobe walls should be pointed as they occur/reoccur so that moisture is not allowed to enter the wall assemblies.[1.2]

No treatments are recommended for the concrete basement walls or the interior wood-framed walls.

Create expansion joints to minimize future cracking on the patio walls on the north side of the structure; recoat surfaces.[1.3]

Structural - Lateral System
Priority: **Minor**
No work is recommended at this time.

Structural - Load Requirements
Priority: **Minor**
No work is recommended at this time.

Treatment -- Mechanical

Mechanical - Treatment Recommendations
Priority: **Serious**
Alternatives should be explored to provide a multiple-zone mechanical system for the Visitor Center. The system should provide uniform heating and cooling throughout the designated zones, especially within the theater and exhibit rooms. Space should be provided to accommodate mechanical equipment.

A radon mitigation system shall be provided for the building. The system shall meet the requirements for radon mitigation suggested by the Environmental Protection Agency.

1.1 Fitzpatrick Report, page 17

1.2 Fitzpatrick Report, page 17-18
1.3 Fitzpatrick Report, page 18

Plumbing - Treatment Recommendations
Priority: **Critical**
There is no reduced pressure backflow preventer on the 2" water line. A backflow preventer should be added to this line. Replace domestic water piping and sanitary piping throughout the Visitor Center and CCC Restroom buildings.

Replace water heaters for both the Visitor Center and CCC Restroom buildings.

Replace sump pump in basement of the Visitor Center.

Provide a sump pump system for collection and discharge of storm water that enters the basement level during storm events.

Replace plumbing fixtures in both buildings.

Treatment -- Electrical

Electrical - Infrastructure
Priority: **Serious**
The existing infrastructure supporting the Visitor Center has been reported to be experiencing breakers tripping throughout the facility. The existing code violations existing within the system also pose safety, maintenance, and operational concerns. The existing infrastructure for the Visitor Center should be replaced with new distribution equipment for a safe and code compliant installation. Existing Panel 'A' should be replaced with a larger panel, sized to accommodate the Visitor Center needs and allow for additional spare, anticipated 400A/3P, eliminating the existing double-tap code violations. Existing panels 'Amphitheater' and 'Historical Restrooms' should be reconnected to breakers within the new Visitor Center panel. Consider providing new feeders to existing panels within existing conduit.

Electrical - Branch Circuits
Priority: **Minor**
Branch circuiting includes separate ground conductors and is routed throughout the building. Existing conduit should be properly supported per the NEC. Consider replacement/upgrades with replacement of infrastructure as all branch circuits will require reconnection regardless, and redistribution of the circuiting would allow for increased functionality at the office and administrative areas with reduced device per circuit density.

Electrical - General Power Outlets and Equipment
Priority: **Minor**
Existing devices are typically 15 and 20Amp duplex receptacles, primarily surface mounted with conduit or wiremold. Additional locations have been added over the years as needed which has increased the density on branch circuit wiring. Refer to Branch Circuits for more information. Consider re-circuiting for reduced device per circuit density for increased functionality and reliability of the receptacles within the Visitor Center.

Electrical - Lighting Systems
Priority: **Minor**
Existing emergency lighting should be tested and replaced as required. New emergency lighting should be installed for safety within areas as required, notably the stairwells and main paths of egress out of the building.

Existing general lighting systems within the space are functional, and somewhat adequate, however many different fixtures reside

within the space. Consideration should be given to replacing existing lighting with new light sources, for consistency of appearance. Fixtures in visitor areas (exhibits, etc.) should be consistent with that of the historical period of significance. Consider the integration of emergency lighting with the new fixtures (battery backup), for better integration of emergency lighting.

Consider replacing commodity fixtures with low heat LED lights to allow for a reduced risk of fire.

Consider integration of a lighting control system with any major lighting replacement to provide code compliant controls, increased functionality and control, and to reduce energy usage during off hours.

Electrical - Lightning Protection
Priority: **Minor**
No existing lightning protection system exists. Lightning protection is not a code requirement, but would provide additional protection for the existing facilities' equipment and operations. Consider the installation of a lightning protection system if required and desired by the park.

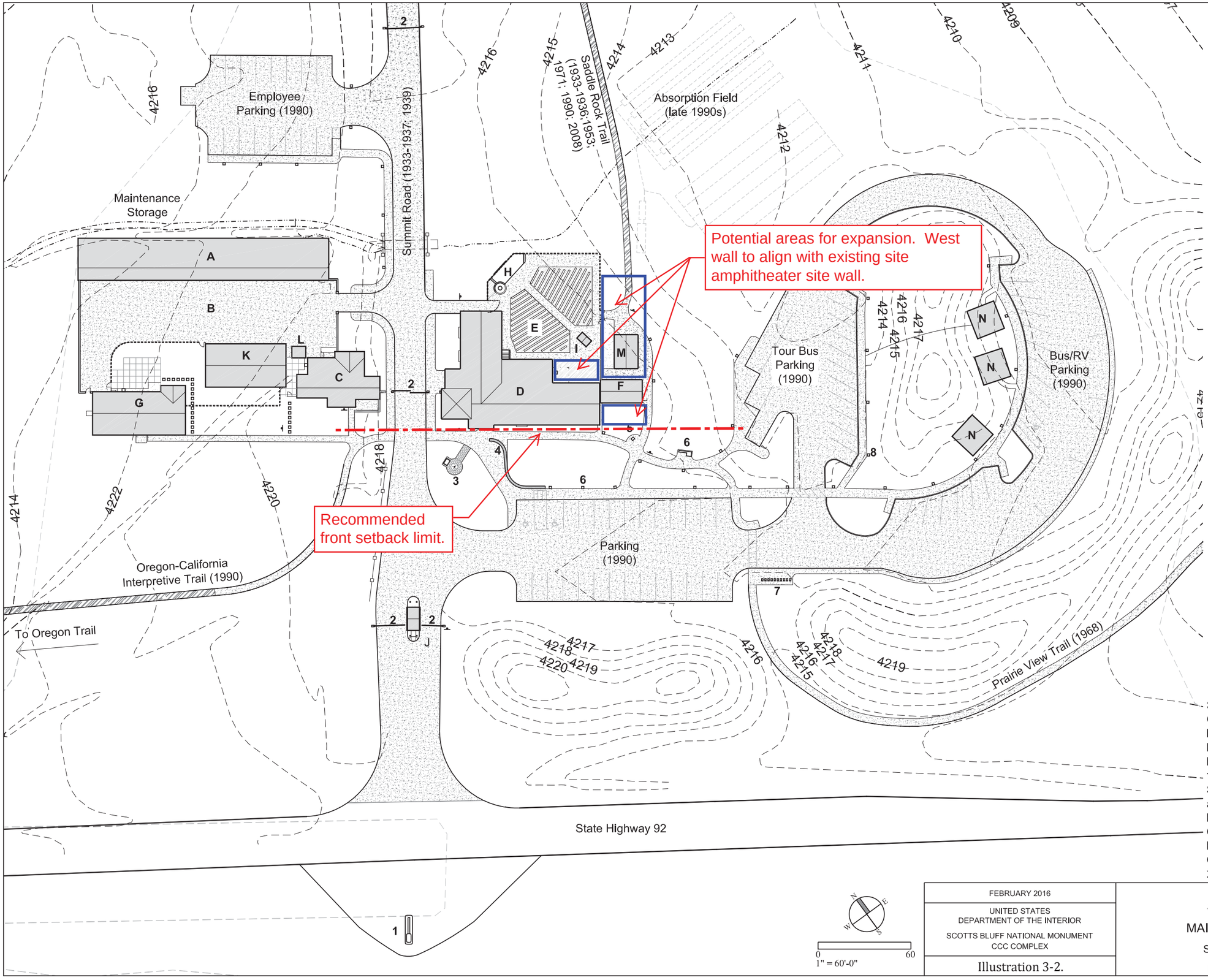
Electrical - Telecommunications
Priority: **Minor**
Existing telecommunications are adequate for the facility use. Potential for additional lines and/or data connections are to be added if required or desired by the park. Any new lines should be provided in conduit per the NPS standards. Consider providing new conduit for existing lines not currently routed through conduit.

Electrical - Fire Alarm and Security
Priority: **Serious**
System function should be reviewed with requirements of fire alarm code study requirements for proposed facility use. At a minimum, the system should be fully tested and all non-functioning devices should be replaced. Exterior horn and alarm lights should be replaced with less obtrusive devices. Relocate the existing head-end panel to a location not within path of egress.

Consider full replacement of fire alarm systems as equipment appears to be at the end of its useful life. Full replacement would allow for easy relocation of the fire alarm panel such that it does not interfere with paths of egress.

Locations for a Future Addition

Current park needs have outgrown the available space in the Visitor Center. To address these issues, an addition will likely be needed to provide additional square footage. An addition would need to be strategically located to provide new square footage while respecting the historic building and surrounding cultural landscapes. This landscape includes the Visitor Center, CCC Restroom and Mission 66 amphitheater directly north of the building, all of which should be impacted as minimally as possible. The addition should also be compatible with the character of this complex.



LEGEND

- BUILDING / STRUCTURE
- WALL
- GRAVEL
- CONCRETE PAVING
- ASPHALT PAVING
- BRICK PAVERS
- SOCIAL TRAIL
- WOOD FENCE
- SPLIT RAIL FENCE
- SWALE
- CULVERT

Buildings and Structures

- A Maintenance Shop (1936; 1958; 1971; 1981)
- B Maintenance Yard (1936; 1958; 1981)
- C 1938 Residence (1938; 1949)
- D Visitor Center (1935; 1937; 1938; 1949)
- E Amphitheater (1958)
- F Comfort Station (1938)
- G 1958 Residence (1958)
- H Stage (1958)
- I Projection Booth (1958)
- J Entrance Kiosk (1990)
- K Vehicle Shed (c.1990)
- L Flammable Storage Shed (c. 2000)
- M Accessible Restroom (2013)
- N Picnic Shelters (3), (2007)

Small Scale Features

- 1 Stucco Entrance Sign (west entrance and front entrance 1954; east entrance 1939)
- 2 Entrance Gates (1990s)
- 3 Flagpole (1990) / Time Capsule (1994)
- 4 Curved Wall at Visitor Center (1990s)
- 5 Drinking Fountain (2003)
- 6 Pony Express Monument (1964; 1990s)
- 7 Bike Rack (1990)
- 8 Pedestrian Lights, Typ. (c. 1990)

Sources: ERO_Scotts_Bluff_NM_GPS.DWG, 2015 Google Maps, 2015 Google Earth, Scotts Bluff National Monument Systems Map, 1939 Headquarters Area - Utilities Layout (part of the Master Plan for Scotts Bluff National Monument), 1939 Headquarters Area (part of the Master Plan for Scotts Bluff National Monument), 1943 Landscape and Walk Developments, 1957 Preliminary Site Preparation and Landscape Plan, 1989 Visitor Center Construction Documents, 1990 Summit Road Revegetation Plan, 1990 Planting Plan - Visitor Center, 2000 Existing Conditions - Visitor Center, 2015 Field Notes

N E S W

0 60

1" = 60'-0"

FEBRUARY 2016

UNITED STATES
DEPARTMENT OF THE INTERIOR

SCOTTS BLUFF NATIONAL MONUMENT
CCC COMPLEX

Illustration 3-2.

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
AND ENVIRONMENTAL ASSESSMENT

TITLE OF DRAWING
MAIN COMPLEX EXISTING CONDITION

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

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1938 Residence - Part 1: Physical Description

General Existing Conditions

The 1938 Residence is a one story building with a painted stucco finish on both the original building and addition. It has a gable roof with wood shingles, exposed rafter tails, and three chimneys. Entry doors are located on the north and south elevations.

Originally a residence, the interior has been converted to office space and now contains three offices, a conference room, a restroom, and two supply rooms.

Existing Conditions -- Architecture

Architecture – Roofing System
In general, the roofing system retains the historic layout and appearance. The building has a gable roof with a low-slope shed roof at the rear, a cross gable at the northeast side, and a lower sloped shed roof on the north side.



Figure 1-103. Roofing and chimneys (NAA, 6/16/2015)

Architecture – Roofing
Roofing is 1/2" wood shingles with a 7 1/2" exposure. Every fifth row of shingles is double thickness which creates a shadow line that highlights the coursing. Shingles are painted a reddish brown.

Architecture – Flashing
Painted metal flashing at the roof valley terminates at the chimney eave soffit.

Architecture – Gutters
A 1 1/2" painted metal drip edge leads to 3" metal ogee profile gutters which are painted dark brown. Metal 2 1/4" x 3" fluted downspouts, painted tan, outfall at grade.

Architecture – Soffit
Wood rafters located 24" on center, painted brown, extend past the face of the building to the roof edge. Between the rafters, the soffit is 2 1/2" 1x v-grooved wood boards painted brown.

Architecture – Chimneys
All three chimneys - two at the original portion of the building and one at the addition - are masonry with a painted stucco finish. Each is capped by a rowlock course of red brick parged to create positive drainage.

Architecture – Exterior Facade
Exterior wall finishes generally match the materials seen in the historic photographs.

Architecture – Exterior Walls - Stucco
Skip-troweled stucco applied to the masonry walls is painted. Paint sample analysis discovered only the current Light Peach paint color on the stucco. See the Appendix for the full paint report. Based on sounding results, the stucco appears to have been applied to a mesh or similar material on the exterior walls. Site walls extending from the building to enclose the front patio and the maintenance yard appear to have the stucco applied directly to the masonry. The site walls extending from the building are capped with smooth to course cut red brick with rowlock coursing that slopes down to both sides from the center.



Figure 1-104. Exterior walls and low walls extending from the building have a stucco finish (KAC, 6/16/2015)

Architecture – Beams
Exposed beam ends project through the stucco walls below the gable ends and are painted brown.

Architecture – Front Patio
The patio is concrete slab on grade that drains to the east via two outlets through the wall. It is surrounded by a brick-capped, stucco masonry wall (see Architecture-Exterior Walls-Stucco for more information).

Architecture – Rear Stoop
Two concrete steps lead down from the maintenance yard. Dry stacked red brick retains grade at the north and edges the slab-on-grade stoop. A 1x wood slat privacy fence borders the north side of the stoop. A painted shed roofed structure covers the stoops and is supported by a 4”x4” post at the southwest corner.



Figure 1-105. Rear stoop (NAA, 6/16/2015)

Architecture – Windows
Windows typically have headers constructed of 6”x8” boards that extend approximately 12” beyond the opening on both sides. Headers sit flush with the stucco and are painted. Sills are typically red brick in a rowlock formation.

Window sash were replaced at an unknown date, so the only historic window that remains is on the interior. Paint analysis on the one remaining window revealed it was originally painted dark brown.

Window 101: Dark bronze metal framed, insulated, fixed picture window with a dark bronze metal break surround.



Figure 1-106. Window 101 (NAA, 6/16/2015)

Windows 102 and 103: Paired, dark bronze metal framed, double hung windows with snap in metal muntins at the interior to create a 6-over-6 appearance. An original 6" wide wood mullion separates the two windows which are set in the original frame. Windows have metal storm/screens which are also pre-finished metal.



Figure 1-107. Window 103 (NAA, 6/16/2015)

Window 104 and 105: One-over-one wood double hung window in the original painted wood frame. Both windows are painted on the exterior, stained on the interior, and have a dark bronze metal storm/screen with an operable lower storm sash.



Figure 1-108. Window 104 (NAA, 6/16/2015)

Window 106: Three one-over-one wood double hung windows ganged together under one beam in the original painted wood frame. The window is painted on the exterior and stained on the interior. It has a dark bronze metal storm/screen with an operable lower storm sash.



Figure 1-109. Window 106 (NAA, 6/16/2015)

Window 107 and 108: Paired, double hung wood windows with snap-in grilles at the interior that create a 6-over-6 appearance. Windows are set in the original wood frame with a wood mullion at the middle. Wood is painted at the exterior and stained on the interior. The dark bronze metal storm/screen

has an operable lower sash.



Figure 1-110. Window 107 (NAA, 6/16/2015)

Window 109: Paired, dark bronze metal framed, double hung window with snap in metal muntins at the interior to create a 6-over-6 appearance. An original approximately 2" wide wood mullion separates the two windows which are both set in the original frame. Windows have pre-finished metal storm/screens.



Figure 1-111. Window 109 (NAA, 6/16/2015)

Window 110: Dark bronze metal framed, double hung window with snap in metal muntins at the interior to create a 6-over-6 appearance. Window has a pre-finished metal storm/screen.



Figure 1-112. Window 110 (NAA, 6/16/2015)

Window 111: Paired, dark bronze metal framed, double hung windows with snap in metal muntins at the interior to create a 6-over-6 appearance. An original 6" wide wood mullion separates the two windows which were installed within the original frame. Windows have pre-finished metal storm/screens.



Figure 1-113. Window 111 (NAA, 6/16/2015)

Window 112: Originally an exterior window, it was converted to an interior window when the addition was constructed in 1949 and appears to be the only intact original window in the building. It is a 2-over-2 double hung, painted wood window with intact cords and weights. On the side that was originally exterior, the sill is sloped stucco over masonry and on the original interior side there is a wood sill with a wood stool, all painted. There is a stucco surround at the original wood frame on both sides.



Figure 1-114. Original exterior side of Window 112 (NAA, 6/16/2015)

Architecture – Doors

Exterior doors are historic with modern metal storm doors installed on the exterior side. Interior doors are generally the historic single panel wood doors painted white.

Door 101: 3'-0" x 6'-10 1/2" x 1 3/4" exterior door composed of 6" vertically oriented v-groove planks, stained and varnished on the interior and exterior. Threshold is wood and approximately 1" high. A non-original, dark bronze metal storm/screen door has been installed on the exterior side.

Door 102: 2'-8" x 6'-8" x 1 1/4" stile and rail original exterior wood door with six true divided lites in the upper third of the door. A non-original dark bronze metal storm/screen door has been installed on the exterior side.



Figure 1-115. Door 102 interior side (NAA, 6/16/2015)

Door 104: Original single panel, painted interior wood door. Hardware is original and consists of hinges, door knob and escutcheon plate.

Door 105: Original single panel, painted interior wood door. Hardware is original and consists of hinges, door knob and escutcheon plate.



Figure 1-116. Door 105 (NAA, 6/16/2015)

Door 107: Hollow core, non-original veneer interior door. On the Hall side, there is a 1/4" round plaster return to the wood door frame. Scars of the former hinge and latch locations are visible on the door frame, indicating the door has been replaced at least once.

Door 108: Original single panel, interior wood door composed of 4" side rails, 5" top rail and 10" bottom rail with a simple ogee form at the panel. There is a 1 1/4" door frame built flush to the plaster walls, which like the door is painted white. Hardware consists of the original hinges but the lockset has been replaced with a residential style lever.



Figure 1-117. Door 108 (NAA, 6/16/2015)

Architecture – Interior Finishes

Many of the interior finishes remain unchanged from their date of construction, though some changes were made over the years, especially in the conversion from a residence to an office when the room uses changed.

Hall (101): Ceiling has a plaster finish. Trusses above this room and Conference (102) are finished with a dark stain, indicating they were originally exposed. These rooms were a single space that served as the Living Room in the original layout. Walls have a combination of gypsum board and plaster finishes. Evidence of repairs from previous damage and surface mounted raceways is located on the walls. A non-historic wood wall base runs throughout the room. The non-original door opening is trimmed, while the two original openings have a plaster finish and no trim. Flooring is carpet tiles.

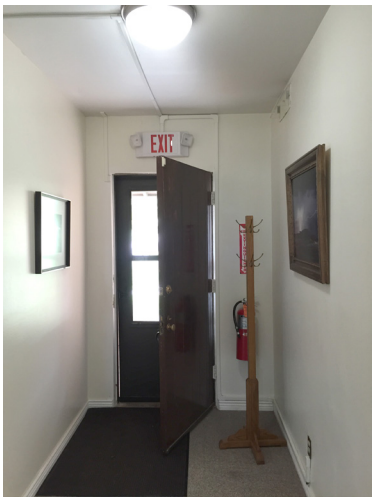


Figure 1-118. Looking south down the Hall (NAA, 6/16/2015)



Figure 1-119. South wall in the Conference Room (NAA, 6/16/2015)

Conference (102): Ceiling is painted plaster that has been "cut-in" with a slightly different shade of white paint. Trusses above this room and Hall (101) are finished with a dark stain which indicates they were originally exposed, likely when the space functioned as the Living Room. Exterior walls appear to be plaster over masonry construction. Interior walls are gypsum board over framed walls. The room has a 3 1/4" painted wood wall base which does not appear to be original. On the east wall, a fireplace that appears to be original has surface applied red zebra brick with black grout. The firebox appears to be from the 1980s and has a surface applied frame with brass doors, held closed by raceways that run across the face.

On the south wall, window sills are 1 1/4" wood with no apron or side trim. Windows on the north wall are trimmed in 2 1/3" wood with a simple profile, circa the 1950s. Horizontal blinds and drapes are attached to a rod at windows on both walls. Doors into the room have been removed and the latch and hinge locations are visible in the casing. Flooring is carpet tile.

Office(103): Ceiling finish is either plaster or gypsum board. Wall finish is sheet paneling. On the west wall, trim surrounds a 4'-5" x 6'-8" opening infilled with gypsum board. Non-original wood wall base is installed throughout the room. There is a built in cabinet at the south wall with plywood wall finish and plywood shelves. The cabinet has a 1x wood and plywood door. There are painted 18" x 36" x 6" OSB open shelves installed on the north wall.



Figure 1-120. Finishes and open shelves in the Office (NAA, 6/16/2015)

Hall (104): Ceiling has a plaster finish and an attic hatch with original detailing. Walls have a plaster finish with original detailing at door openings. The wall base is non-historic 2 1/2" wood. At the northwest side of the Hall, there is a built-in cabinet. A plywood panel is mounted on the north wall. Flooring is carpet tiles.

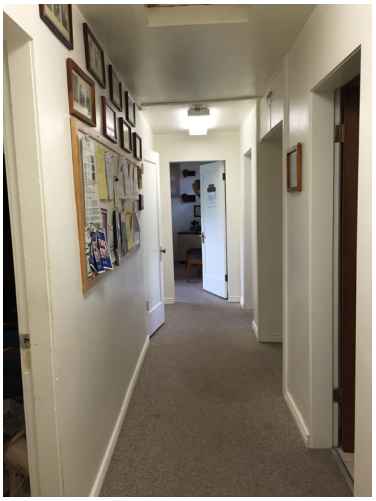


Figure 1-121. Looking west down the Hall (NAA, 6/16/2015)

Restroom (105): Ceiling has the original plaster finish. Fiber reinforced plastic with a faux marble finish was installed full height on the east and north walls and up to 52" above the floor on the west and south walls. Where visible behind this modern finish, walls have the original plaster finish. There is wood ogee trim at all corners and fiber reinforced plastic trim at the top of the wainscot. Walls have a 4 1/2" base. A new medicine cabinet is mounted on the wall. Floor finish is 12" x 12" porcelain tile with a faux stone pattern and 1/4" dark grout.



Figure 1-122. Finishes and fixtures in the Restroom (NAA, 6/16/2015)

Office (106): Ceiling finish appears to be the original painted plaster. It has surface mounted data raceway which is poorly attached and a cover plate at the center of the ceiling which indicates the location of the original light fixture. Walls appear to have the original plaster finish with newer 3 1/4" wood base trim. Windows have simple 2 1/4" wood trim, which likely date to the window replacement project. Flooring is carpet tiles.



Figure 1-123. Finishes in the Office (NAA, 6/16/2015)



Figure 1-124.Finishes in the Office (NAA, 6/16/2015)

Closet (107): Ceiling and walls appear to have the original painted plaster finish. The newer 2 1/4" wood trim in Office 106 continues into the Closet, as does the carpet tile flooring.

Closet (108): Ceiling and walls appear to be painted gypsum board and the space has carpet flooring.

Office (109): Walls and ceiling have a gypsum board finish. There is a built in book shelf just south of the entry door. Wood wall base is painted 1x4 and has a ghost of a 3/4" high shoe moulding. Windows have a simple 2 1/4" wood trim. At the door, there is 1x5 painted wood trim with a radiused outside edge. Flooring is carpet tile.

Supply Room (110): Ceiling has a gypsum board finish. Walls dating to the addition have a plaster finish, though it is rougher than the finish in the original portions of the building. Plaster returns have a 1/4" round bead. Walls around the Utility Closet have a gypsum board finish. There is an infilled door opening on the east wall, though the infill is stepped back from the wall face so the rounded plaster return remains. Conduit and data raceways are surface mounted to the walls. There is no wall base and the trim around the window is simple 2 1/2" wood. The floor slopes down from the door into the room and has a carpet tile finish.



Figure 1-125. Finishes and infilled opening on the east wall of the Supply Room (NAA, 6/16/2015)

Utility Closet (111): Ceiling is two layers of gypsum board, painted. East and south walls have a plaster finish while the west and north walls are wood framed with no finish on the Closet side. A modern accordion door closes the room off from the Supply Room. A former chimney is located in the southwest corner and the ash clean out panel is located near the floor. Flooring is 12" x 12" white ceramic tile which was laid over vinyl composition tile or another similar material.



Figure 1-126. Finishes, equipment, and the abandoned chimney in the Utility Closet (NAA, 6/16/2015)

Hall (112): Ceiling finish is painted gypsum board. Walls have a painted rough plaster finish, which could possibly be the original exterior stucco finish. There is an abandoned hose spigot still intact on what was the exterior wall and a former door location has been infilled. Flooring is 12" x 12" porcelain tile with a faux stone appearance and 3/8" dark grout. The floor level in this room is 3 1/2" lower than the rest of the building with a tile transition step up to the Copy / Supply Room and a 1" metal carpet tack at the step up to the Hall to the south.

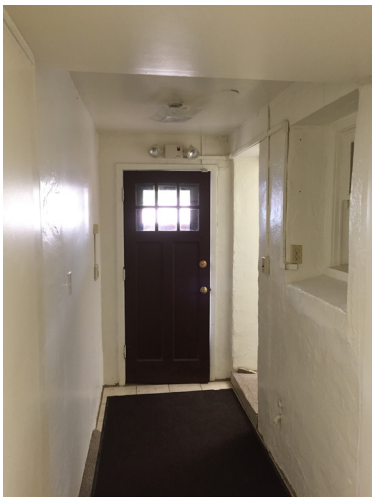


Figure 1-127. Looking north down the Hall (NAA, 6/16/2015)

Copy / Supply Room (113): Ceiling has a plaster finish. Walls have wood paneling, painted white with a wood trim at the corners and ceiling. There is an integral pin up board on the east wall that is painted. A 3 1/2" wood wall base runs throughout and a built-in base and counter is located on the north and east walls. The counter is 36" above the floor and 16" deep on the east wall and 24" deep on the north wall. Lots of surface mounted conduit and data wires are mounted on the wall. Trim around the window is simple 2 1/4" wood. Carpet tile flooring runs throughout the room.



Figure 1-128. Finishes in the Copy/Supply Room (NAA, 6/16/2015)

Architecture – Code/Life Safety Issues

The 1938 Residence (now functioning as an administration office building) is a one-story, adobe building with wood framed interior walls and roof structure. The building has a small CMU addition with exterior stucco finish.

Occupancy
B

Construction Type
VB non-sprinkled

Area
First Floor 1278 sf

The 1938 Residence was changed from a residential use to office use in the late 1980s. The existing building is a 1,278 square feet, one story structure. As a National Park project, any proposed rehabilitation of the 1938 Residence which now functions as Business space, is subject to the DSC

workflows. As such, it is governed by the 2012 International Building Code and its related family of codes.

Architecture – Accessibility
As a building governed by the Architectural Barriers Act. ANSI A117.1 2003 is the guiding document for accessibly. The south entrance is accessed by a flat walkway which connects to the street, and while the door opening does meet the clearance requirements from the exterior, the door hardware does not meet accessibility requirements. The door does not meet the minimum approach requirements from the interior. The north entrance is accessed via a series of steps - a step down from the maintenance yard to a small patio area and a step back up at the door from the patio. Additionally, there is a step up at the end of Hall (112) so this egress path does not meet accessibility requirements. This door does not have accessible lever style hardware. The door approach from the interior does not have the minimum approach requirements.

Interior doors generally do not meet clearance requirements for accessible opening widths. However, the doors have been removed from some openings which generally brings them into compliance. Doors do not typically have thresholds, nor do openings where the doors have been removed, so they meet threshold requirements. Lever hardware has been installed on some of the interior doors but many do not have accessible hardware.

Restroom 105 is not accessible.

Existing Conditions -- Structural

Structural - General System Description
The 1938 Residence was constructed in two phases during the middle of the 20th century. It currently is a one-story structure and is about 1,200 square feet. The earliest portion of the building was constructed in 1938. In 1948, an addition was constructed to the west of the original building. The following is based on field observations and the drawings from 1936 and 1948.

Structural - Foundation
Below the 1938 Residence, the foundations consist of concrete stem walls and, in some locations, concrete footings.

Under the walls of the 1938 portion of the building, concrete stem walls extend at least 2'-0" below the bottom of the interior slab on grade and at least 6" into natural soil. Beneath exterior walls, the walls are 1'-5" thick and beneath interior bearing partitions, they are 8" thick.

The portion of the building added during the 1948 campaign is founded on an 8" thick concrete stem wall and a 16" wide footing that is 6" thick. The bottom of the footings are at least 2'-6" below grade. A strip of foundation below what was an adobe site wall extending west from the northwest corner of the Hall (104) was left in place and reused for the building addition. The 1948 drawings specified that the new footings be tied into the existing foundations, but did not specify how.

Structural – Floor Framing
Throughout the 1938 Residence, the floors are 4" concrete slabs on grade reinforced with welded wire mesh. The connection of the finish flooring material to the slab differs depending on the vintage of the addition in question. In the original part of the building, the floor finishes are applied to screeds on the concrete slab. In the southern part of the 1948 addition, 2x4 sleepers spaced at 16"

are partially embedded in the concrete slab and are sheathed with a layer of plywood. In the northern part of the 1948 addition, the 4" thick concrete slab is 3 1/2" lower than the rest of the building.

Structural – Roof & Ceiling Framing
The roof structures of both the original part and the addition to the residence are framed similarly to each other.

In the original building, the 2x6 rafters are spaced at 24" on center and span at a 5 on 12 slope from a 6x8 plate at the top of the adobe walls to a dropped 6x8 ridge beam. The rafters are notched to bear on the ridge beam (See Figure 1-129).



Figure 1-129. Rafters meeting at the dropped ridge beam in the original portion of the 1938 Residence. Note that the rafters are notched to bear on the ridge beam (IRG, 06/17/2015)

Above what was the living room and is now the Hall (101) and Conference Room (102), the rafters were originally exposed as evidenced by the darker and more refined finish of the members (See Figure 1-130).



Figure 1-130. Originally exposed rafters in the 1938 Residence. Note the ceiling sheathing material on top of the rafters, the 6x6 post at the center of the space landing on the 10x10 beam, and the 1x vertical struts (IRG, 06/17/2015)

In this area, the tops of the rafters are sheathed with the original ceiling material. At the midpoint of this same part of the building, a 6x6 post extends down from the ridge beam and lands on a 10x10 tie beam that spans across the space at the top of the adobe walls, essentially creating a king post truss at this location. Since this attic space was enclosed, 2x vertical struts between the ridge beam and the ceilings joists were added. At the transition point where the rafters were and were not exposed, the ridge beam is spliced with a scarf joint over a gauged double 2x4 post in the partition wall which is sheathed with the same material used for the ceiling (See Figure 1-131).



Figure 1-131. Scarf joint in the ridge beam at the transition between where the ceiling was exposed and not exposed. Note the double 2x4 post and the ceiling sheathing between the studs (IRG, 06/17/2015)

In the areas where the rafters were not exposed, wood shims fill the space between the tops of the rafters and the 1x horizontal sheathing to plane out the roof surface with that of the area where the ceiling was exposed and installed on top of the rafters (See Figure 1-132).



Figure 1-132. Shims above the rafters where they were not exposed to flush out the 1x roof sheathing throughout the building (IRG, 06/17/2015)

Throughout the space that was not exposed, 1x and 2x verticals have been added over time, including one piece of lumber which was used when painting the decorative precast concrete inserts of the Visitor Center (See Figure 1-133).



Figure 1-133. 1x vertical strut used to paint the decorative precast concrete inserts of the Visitor Center (IRG, 06/17/2015)

Between the original part of the building and the addition, a truss-like configuration of wood members supports the ridge beam. A

vertical post extended down from the ridge beam to a timber beam spanning between the walls where the original exterior wall would have been located (See Figure 1-134).



Figure 1-134.Truss-like assembly at the transition between the original part of the building and the 1948 addition (CLB, 06/17/2015)

On either side of the main post, an auxiliary vertical post extends down to the beam. At the tops of the auxiliary posts, diagonal struts extend down to the base of the center post. A 1x horizontal member helps brace the elements of the truss assembly. The original rake edge rafter and exposed roof decking are still visible in the attic (See Figure 1-135).



Figure 1-135. Rake edge rafter and sheathing originally exposed before the 1948 addition are now enclosed in the attic (IRG, 06/17/2015)

In the 1948 attic space above Office (109), the rafters are also 2x6 members spaced at 24 inches on center, but rather than being supported by a ridge beam, they meet at a 2x6 ridge board. Near the peak of the roof, each rafter pair is tied together with a 1x gusset nailed in place (See Figure 1-136).



Figure 1-136. 1x gussets at the peak of the rafters in the attic of the 1948 addition (IRG, 06/17/2015)

These rafters span on a 5 on 12 slope from the ridge board to a 2x wall plate anchored

to the top of the CMU walls. 1x cross bridging is placed at the midspan of the rafters (See Figure 1-137).



Figure 1-137. 1x cross bridging at the midspan of each rafter bay in the 1948 addition (IRG, 06/17/2015)

The roof above the Supply Room (110), the Utility Closet (111), and the Hall (112) varies slightly from the other roofs in that the slope drops from 5 on 12 to 3.5 on 12. At this transition, the 2x6 rafters of both roofs align with each other (spaced at 24" on center), but rafters on the lower slope are notched to lap on top of the 5 on 12 rafters (See Figure 1-138). These lower rafters then span to a wood plate atop the north exterior wall that is anchored into the wall.



Figure 1-138.The transition between the low pitched and high pitched roofs of the addition. Note the low pitched rafters are notched and cut to fit on top of the high pitched roof rafters (IRG, 06/17/2015)

The ceiling joists throughout the building are 2x4 members spaced at 16" on center.

Structural – Wall Framing

There are several types of wall construction used in the 1938 Residence. The exterior walls of the original building are constructed of adobe brick masonry while the interior walls are of wood-framed construction. In the addition, the walls are constructed of concrete masonry units (CMU) and the interior walls are wood-framed.

The adobe bricks are laid in a running bond masonry pattern between wood posts in the wall. The surface of the wall is covered with a stucco render on the exterior but are unfinished on the interior face (See Figure 1-139).



Figure 1-139.Unfinished adobe wall visible from the attic of the 1938 Residence. Note the wood post embedded in the adobe wall (CLB, 06/17/2015)

The CMU walls are 8" thick and the units are laid in a running bond pattern (See Figure 1-140).



Figure 1-140. West CMU gable end wall of the 1948 addition visible from the attic. Note the faux ridge beam (IRG, 06/17/2015)

Both the exterior and the interior faces of the CMU walls are covered in coatings to match the original portion of the building.

Structural – Lateral System
The lateral force resisting system consists of the roof diaphragm and the interior and exterior walls. The adobe and CMU walls rely on their mass and stiffness, along with the mud mortar and mortar joints, to transfer shear forces to the foundations. The framed walls rely on the sheathing. Given their relative flexibility compared to the masonry walls, they contribute only minimally to the primary lateral force resisting system, but they do offer a level of redundancy.

Structural – Load Requirements
The load requirements for the 1938 Residence are based on the type of occupancy (live load) and geographical location of the building (climatic design criteria). The required floor live load capacity per the 2012 IBC for residential occupancies is 40 pounds per square foot (psf) and for office use it is 50 psf.

The ground snow load required for Scotts Bluff National Monument per Figure 1608.2 in the 2012 IBC is 20 psf. This ground snow load translates to a roof snow load on the 1938 Residence of 20 psf per ASCE 7-10, Minimum Design Loads for Buildings and Other Structures. The Code required minimum roof live load of 20 psf governs since a larger duration factor (strength factor) is assigned to roof framing experiencing snow loads than wood framing experiencing live loads.

Existing Conditions -- Mechanical

Mechanical – Physical Description
The building contains a central gas fire furnace system with air conditioning. The furnace is a natural gas fired furnace located in a mechanical closet located in the Utility Closet.



Figure 1-141. Furnace (DMD, 6/16/15)

The furnace is a high efficiency 90% furnace, Lennox Model MX603185-02, and Serial #ZZ14K31458. The outdoor condensing unit is located to the north outside the Utility Closet and is a Lennox Model AC13-042-230-01.


Figure 1-142. Outdoor Condensing Unit (DMD, 6/16/15)

Based on model numbers, the air conditioning system is a nominal 3.5 ton system.
The furnace and condensing unit were manufactured in 2014.

The supply air and return air for the furnace system is ducted throughout the residence through sheetmetal ductwork located in the attic space.


Figure 1-143. Ductwork in attic (DMD, 6/17/15)

There is no direct outside air ducting to the system. There is a smoke detector on the return air duct into the furnace.


Figure 1-144. Smoke Detector (DMD, 6/16/15)

The combustion air and flue venting for the high efficiency system is PVC and routed through an old chimney to the outside.



Figure 1-145. Combustion air and flue venting (DMD, 6/16/15)

Bedroom #2 is supplied with a 13.5" x 9.5" register located high in the space. There was no return air register from this room.

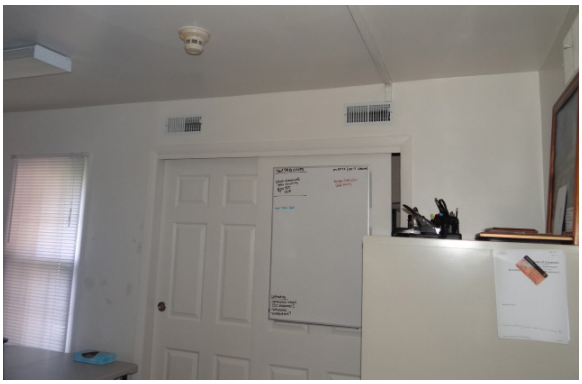


Figure 1-146. Typical registers (DMD, 6/16/15)

Bedroom #1 is supplied with a 13.5" x 9.5" register located high in the space and contains two 11.5" x 5.5" return air registers on the north wall.

The once kitchen area, now Office (103), is supplied by a 13.5" x 9.5" register. There was no return air register in the room however, this room is open to the main hallway.

There is a 13.5" x 5.5" supply register in the main hallway directed towards the once designated living room, now the Conference Room.

There is a 7.5" x 5.5" supply register in the ceiling of the bathroom. In addition to the supply register in the bathroom, there is a small exhaust fan ducted directly to the outside.

The thermostat for the system is located in the hallway near the center of the building. The mechanical system is one zone for the entire building.



Figure 1-147. Thermostat in hallway (DMD, 6/16/15)

There is a fireplace located in the former living room, now the Conference Room, that is non-operational.

The only outside air ventilation for the building is provided by the individual rooms' operable windows.

Plumbing System - Physical Description

The domestic cold water line enters the building from the east side just outside the

previous kitchen, now Office (103). The line is a ¾" line and provides water to the bathroom including a flush tank water closet and lavatory and a hose bibb on the east wall outside the previous kitchen. The water line is also routed to the Utility Closet where it has been capped. The water line used to serve an outside hose bibb and laundry room faucet.



Figure 1-148. Bathroom with water heater (DMD, 6/16/15)

The hot water system is a small AO Smith water heater located above the water closet in the restroom. This water heater provides hot water for the bathroom lavatory. The water heater is new and connected to the lavatory via stainless steel flexible fixture connection hoses.



Figure 1-149. Water Heater (DMD, 6/16/15)

The sanitary line to the lavatory is PVC. There is no accessible crawl space to determine the overall sanitary line material for the fixtures. There is a depression area in the Utility Closet near the southeast corner of the room which has been carpeted over that aligns with a previous floor drain location. The condensate drain line from the air condition system located in the room is routed directly to the outside and daylights to east.

The natural gas line is located on the north side of the building in the northwest corner. The gas line is routed through a gas meter and then along the side of the building into the utility room to the gas furnace.



Figure 1-150. Gas Meter (DMD, 6/16/15)

Fire Protection System - Physical Description
There is no wet fire protection system within the building.

Existing Conditions -- Electrical

Electrical – Infrastructure
Roosevelt Public Power District (RPPD) is presently the electrical utility provider with electrical services routed to the main gear located at the Maintenance Building. Refer to the 2016 Cultural Landscape Report for more information. The main gear, housed in the Maintenance Building also described within that section of this report, provides distribution to the 1938 Residence via a 100 Amp, 2-Pole breaker. From the 100A breaker in the main gear, an existing feed is routed through an interior meter adjacent to the main gear, then underground to a 100A, 120/240V Single Phase Panel located within the Mail Room inside the building.



Figure 1-151. Existing 1938 Residence 100A Power Panel (JB, 6/16/2015)

This panel is a Schneider electric QO load center, 24 circuit, 100 amp, 240/120V, single phase panel. Loads indicated on the panelboard directory include connections for the exit gate, copier, furnace, air conditioning unit, and general power and lighting circuits. The loads within the panel utilize 23 of the 24 circuits, with one available bussed space within the panel. Grounding for the structure was not observed.

Electrical – Branch Circuits
The existing branch circuit wiring within the 1938 Residence was observed as a combination of recessed within the existing walls and surface mounted within wiremold.

There is existing knob and tube wiring within the attic space of the residence, but it is unclear whether it is connected to distribution or devices within the residence.


Figure 1-152. Knob and tube wiring observed in attic space (JB, 6/16/2015)

Electrical – General Power Outlets and Equipment
Typical throughout the 1938 Residence, 15 and 20 Amp duplex receptacles exist, with about half of the locations recessed within the existing walls, mounted typically 6" to 8" above the finished floor. Additional receptacles, more recent additions, specifically in the Conference Room and office areas are typically surface mounted 6" to 8" above the finished floor. Receptacles throughout are typically convenience, however there is a copier located within the

existing conference room area, as well as a microwave within the furnace room storage area.

Electrical – Lighting Systems
The historic light fixtures were replaced by fluorescent as a result of remodel work completed in the residence. The primary areas, including the Conference Room, offices, Utility Closet, and hallway incorporate the use of surface mounted wrap-around fluorescent light fixtures, with a surface mounted decorative fixture at the main and rear entrances. The restrooms utilize fans with integral lighting, as well as vanity fixtures. Office (103) utilizes incandescent track lighting, and incandescent wall sconces were observed on either side of the fireplace in the existing Conference Room.

Existing lighting controls within the residence consist of a standard on/off wall switch control for each room.

Combination exit sign/emergency lighting exists at both front and rear entry doors. Upon testing, neither emergency light appears to be functional.

Electrical – Telecommunications
The existing telecommunications service to the 1938 Residence is from the main server located in the basement of the Visitor Center to the small server located within Office (106) on the south side of the residence. The building to building connections use fiber for communications between the (3) server racks on the site.



Figure 1-153. Server Rack located within Office (106), utilizes fiber for building to building connections (JB, 6/16/2015)

Phone boxes for the residence are located within the Utility Closet. Data and phone receptacles are located throughout the residence, typically (1) or (2) per room, surface mounted with wiremold for the wiring to the device.

Low voltage cabling routes through the attic space of the residence, and is not routed through conduit per current NPS standards.

Electrical – Fire Alarm and Security System
The existing fire alarm system within the residence consists of standard residential combination carbon monoxide and smoke detectors, with one located in each of the offices, Conference Room, and Hallway.

The security system at the residence consists of wall mounted motion-detectors located within each space.

Electrical – Lightning Protection
No lightning protection is installed on the building, and there is no surge protection on the existing electrical system.

Existing Conditions - Hazardous Materials

Hazardous Materials - General Description
See the full Hazardous Materials Evaluation by Landmark Environmental in the Appendix.

Asbestos Assessment
The 1938 Residence was visually reviewed and samples were taken at locations of potential asbestos containing building materials. Bulk materials samples were collected of a composite core which included all layers within the suspected asbestos containing material (ACM). Samples were then sent to Reservoirs Environmental, Inc. for testing.

Lead Containing Paint
The lead containing paint inspection included a visual inspection and sampling of the structure. Paint chip samples were submitted to Reservoirs Environmental, Inc. for testing using the Atomic Absorption / Inductively Coupled Plasma protocol to determine lead content.

Additionally, soil grab samples were collected to determine if lead was present at concentrations above applicable regulatory screening in soils at the drip line of the building.

Moisture and Microbial Evaluation
Landmark performed a visual assessment for microbial growth and conducted a moisture survey of suspect porous building materials utilizing a moisture meter.

Biological
A visual survey was performed for any indications of potential biological hazards. The inspector also interviewed staff regarding their knowledge of any existing conditions.

General Condition Assessment

Depending on the element, the 1938 Residence is in good to poor condition - requiring repairs or replacement of some exterior features and repairs of a few interior elements. Some elements of the mechanical and electrical systems require repairs, upgrades, or replacements.

Condition Assessment -- Architecture

Architecture – Roofing System
Condition: Fair to Poor
In general, the roofing system is in fair to poor condition with many of the elements requiring replacement or repair.

Architecture – Roofing
Condition: *Good
Wood shingles are in poor condition with failing paint across the roof and moss established at the ends. Shingles have overlapping gaps, and on the east side some of the shingles are broken.

*The park replaced the cedar shingles in 2016 so the condition has improved since the team's site visit in June 2015.



Figure 1-154. Deteriorated wood shingles (NAA, 6/16/2015)

Architecture – Flashing
Condition: Poor
Flashing at the top of the valley traps water, as does valley flashing that terminates at the side of the chimney eave soffit. Flashing is missing from some of the valleys.

Architecture – Gutters
Condition: Fair
Gutters are in fair condition with peeling paint and rust. Pine needles filled up the majority of the gutters at the time of the site visit. Downspouts are in fair condition with some dents and areas of chipped paint.

Architecture – Soffit
Condition: Good
Soffits are in good condition.

Architecture – Chimney
Condition: Poor
Chimneys are in poor condition with a cricket missing at the upslope side of one and caulking instead of flashing around all of them at the base. Stucco finish on the chimneys is cracked and failing.



Figure 1-155. Failing stucco at a chimney (NAA, 6/16/2015)

Architecture – Exterior Facade
Condition: Fair
Generally, the exterior facade is in fair condition with deterioration to some finishes.

Architecture – Exterior Walls - Stucco
Condition: Fair
Hairline cracks are present in the stucco. In a few isolated areas, cracks have allowed water penetration and the water was then trapped by paint which caused delamination.



Figure 1-156. Delaminating stucco finish and chipped paint on a downspout (NAA, 6/16/2015)

Architecture – Beam Ends
Condition: Good
Beam ends appear to be in good condition.

Architecture – Front Patio
Condition: Good
Patio is in good condition.

Architecture – Rear Stoop
Condition: Good
Stoop is in good condition.

Architecture – Windows
Condition: Good
Window headers and sills are generally in good condition. Where the bricks meet end-to-end into the depth of the wall, the mortar joint has allowed some water penetration causing damage at these areas.

Window 101: Good condition.

Window 102: Good condition.

Window 103: Good condition.

Window 104: Good condition.

Window 105: Good condition.

Window 106: Good condition.

Window 107: Good condition.

Window 108: Good condition.

Window 109: Good condition.

Window 110: Good condition.

Window 111: Good condition.

Window 112: Good condition.

Architecture – Doors
Condition: Good
Doors, both original and modern, are in good condition.

Door 101: Good condition.

Door 102: Good condition.

Door 104: Good condition.

Door 105: Good condition.

Door 107: Good condition.

Door 108: Good condition.

Architecture – Interior Finishes
Condition: Good to Fair
Generally the building has been maintained over the years and finishes are in good to fair condition. Some finishes, such as carpet, require semi-regular replacement due to normal wear. A few, select finishes are in poor condition.

Hall (101): Ceiling and wall finishes are in fair condition with a crack at the door header that transfers up to the ceiling. Flooring is in fair condition with wear evident in some locations.

Conference (102): Ceiling finish is in good condition with some minor cracks that have been repaired. Walls are in fair condition with applied raceway throughout. Carpet flooring is in good condition.

Office(103): Ceiling is in fair condition with superficial cracking. Walls are in fair condition with former nail holes either unfilled or filled in with wood filler or caulk. A panel on the east wall is damaged but the damage was not recent, as it has been painted over. Flooring is in fair condition with wear evident in places.

Hall (104): Ceiling finish is in good condition with a minor crack at the opening to the north. Wall finish is in good condition. Flooring is in fair condition with wear showing in the center of the space.

Restroom (105): Plaster finish on the ceiling is in fair condition and on the walls is in good condition. The fiber reinforced plastic wall finish is in fair condition. Tile flooring is in good condition.

Office (106): Ceiling finish is in fair condition with superficial cracking. Wall finish is in fair condition with many former attachment areas filled in with white caulk. Patched areas of the wall appear to be newer and are not painted. Base trim is in fair condition, as is the carpet tile which is showing wear at the desk chair location.

Closet (107): Ceiling and walls finishes are in fair condition with superficial cracking on the ceiling and raceway attached to the wall. Carpet flooring is in good condition.

Closet (108): Ceiling, wall, and floor finish appear to be in good condition.

Office (109): Ceiling finish is in fair condition with minor cracking and lots of joint compound applied at the joints. Wall finish and flooring are in good condition.

Supply Room (110): Ceiling finish is in fair condition with visible board joints in the field and a seam that has opened. Wall finish is in fair condition with visible areas of dripping paint. Flooring is in fair condition with wear visible in the carpet near the door and a soft spot at the northeast corner of the room, where a drain used to be located.

Utility Closet (111): Ceiling finish is in fair condition with visible seams. Wall finishes are in fair condition, there is rust and staining around one of the chimney cleanouts. Tile flooring is in fair condition with staining in many places.

Hall (112): Ceiling and wall finishes are in fair condition with some surface applied conduit. Flooring is in good condition.

Copy / Supply Room (113): Ceiling finish is in good condition. Wall and floor finishes are in fair condition with visible wear in places.

Architecture – Code/Life Safety Issues
Condition: Fair
The 1938 Residence generally meets code requirements of the IEBC. There is no code requirement for a fire suppression system in this building but NPS Director's Order 58 section 9.1.8 requires consideration for fire suppression of structural fires "to prevent loss of human life and minimize damage to historic property resources." However, it acknowledges that when these requirements would require work that would damage the historic character and integrity of the building then other changes will be made in lieu of altering the building. If the park decides a fire suppression system is required, they will need to work carefully with the design team to ensure it is installed in a way that is not detrimental to the remaining historic fabric.

Architecture – Accessibility
Condition: Poor
The current configuration does not meet ANSI standards for an accessible building. The current configuration does not provide a fully accessible entrance, many doors are narrower than the required width (32" clear), and knob style hardware remains at most doors.

Condition Assessment -- Structural

Applicable Codes:
The code references used for this assessment include the 2012 IEBC and ASCE 7-10 Minimum Design Loads for Buildings and Other Structures.

Structural – Foundation
Condition: Good
The foundation of the 1938 Residence is in good condition. There are no major signs of settlement or displacement such as cracks in the walls above.

Structural – Floor Framing
Condition: Good
The concrete slab floors of the 1938 Residence appear to be in good structural condition. The slabs are not exposed for examination but the floors are level.

Structural – Roof and Ceiling Framing
Condition: Good
The 1938 Residence's roof framing system is in good condition overall. There are no visible signs of distress on the exterior or interior of the building, but there is one area that could be improved if other work is planned in the area. At the transition between the two different roof pitches in the 1948 addition, the notched connection is not ideal. Typically notches are limited to a quarter of the depth of the member, but here the rafters are notched at about half their depth.

Structural – Wall Framing
Condition: Good
Although the wall system was only visible in the attic at the time of the observations due to finishes, the walls appear to be in good condition. There are no signs of deterioration or overload.

Structural – Lateral System
Condition: Good
The lateral stability of the residence is good. The walls are acting in a monolithic fashion, are compatible in terms of rigidity, and there seems to be adequate connectivity between the differing types of walls at intersections.

Structural – Load Requirements
Condition: Good
The live loads imposed on the structural framing elements of the 1938 Residence

are of little concern. The members are of adequate size to carry the loads required by the Code. Floors are supported by concrete slabs. Roof loads did not changes when the residence was converted to an office.

Based on microscopic analysis of a sample taken from the rafters of the 1938 Residence, the wood species was identified as Douglas-fir. Due to the low amount of knots that are small and well spaced, the grade used for analysis was Grade No. 1.

Condition Assessment -- Mechanical

Mechanical – Condition Assessment:
Condition: Good to Poor
The existing main mechanical heating and cooling equipment is new and in excellent condition.

The ductwork system was reused and located in the attic and has suffered damage as people have accessed the attic for routing of electrical, IT cable, and other maintenance items. Overall the ductwork is in poor condition. In addition, not every room is provided with a ducted supply and return grille. This limits the ability of the system to provide thermal comfort throughout the building.

Plumbing – Condition Assessment:
Condition: Good to Fair
The existing water line into the building is in good condition. There is no backflow preventor on the entry line which is required by the International Plumbing Code.

The plumbing fixtures are in fair condition.

The electric water heater is in good condition.

Fire Protection - Condition Assessment:
Condition: N/A

Condition Assessment -- Electrical

Electrical – Infrastructure
Condition: Poor
The existing panel serving the 1938 Residence does not take advantage of the 120/208V, 3 phase power available at the site, but the capacity is sufficient for the existing loads at the 1938 Residence currently utilized as an administrative building. Existing metering of the 1938 Residence as it relates to the service from the Maintenance Building needs to be reconfigured so utility meters do not double meter loads. Grounding for separate structures as required under the National Electrical Code 2014 (NEC) Section 250 needs to be provided.

Electrical – Branch Circuiting
Condition: Poor
General branch circuiting is adequate for current administrative uses, however knob and tube wiring observed within the attic space needs to be addressed.

Electrical – General Power Outlets and Equipment
Condition: Fair
Existing devices and equipment appear to be in operating condition and are located throughout the residence to meet administrative needs. Some additional locations may be considered for areas being utilized for office work, however the existing locations have been adequate for current administrative uses per discussions with National Park Service staff on site.

Electrical – Lighting System
Condition: Poor
Per on site discussions with the National Park Service staff, the existing lighting systems located within the spaces are functional and adequate for current administrative purposes, however some of the fixtures still utilize outmoded incandescent lamping.

On/Off wall switches are still utilized, and there is no automatic control present.

Emergency lighting fixtures and exit signs are lacking as they currently exist. When tested, emergency lighting was no longer operational.

Electrical – Telecommunications
Condition: Fair
The existing service to the 1938 Residence is adequate for existing phone and computer connections being utilized for employee use, as noted by National Park Service staff on site.

It should be noted that the routing observed in the attic space is not currently enclosed within conduit per current NPS standards.

Electrical – Fire and Security Systems
Condition: Poor
Fire alarm notification is missing coverage per National Fire Protection Association (NFPA) 72 Section 7.5. The system does not communicate with main fire alarm control panel located within the Visitor Center.

The existing security system is limited and does not communicate with main security equipment located within the Visitor Center.

Electrical – Lightning Protection
Condition: Poor
There is no existing lightning protection system at the 1938 Residence.

Condition Assessment - Hazardous Materials

Hazardous Materials - General Description
Condition: Fair
See the full Hazardous Materials Evaluation by Landmark Environmental in the Appendix.

Asbestos Assessment
ACM is defined as a material containing greater than one percent asbestos by weight, volume or surface area. Regulations distinguish treatment requirements between friable and non-friable forms of ACM. Test results of samples taken in the building identified the following materials as ACM:

- Air cell pipe insulation debris (friable) - located in the attic.
- HVAC duct seam paper (friable) - located in the furnace closet.
- Sheet vinyl flooring (friable) - located under the carpet flooring in the copy room.

Additionally, roofing materials were not sampled as part of this survey and are assumed to be ACM.

Lead Containing Paint
Lead Based Paint (LBP) is defined as a paint containing 0.5% lead by weight or 1.0 milligram per cubic centimeter by both the EPA and HUD. The following sample was determined to contain greater then 0.5% lead concentrations:

- Tan paint on the metal downspout on the north exterior has 0.61% lead.

The EPA, established screening levels/ cleanup criteria for lead in soils based on direct contact in residential scenarios is 400 mg/kg and none of the samples were above this.

Moisture and Microbial Evaluation
Landmark did not observe visual indications of water intrusion and/or damage within the structure.

Biological
No indications of accumulated rodent or bird feces were observed and on-site personnel were not aware of any significant signs of pest intrusion.

Character Defining Features for the 1938 Residence

Mass/Form. The overall shape of the building, from its cross shaped plan and the form of the one story building with a combination of gable and shed roofs, is a character defining feature. The three chimneys contribute to the building's character.

Exterior Materials. The majority of the exterior finishes are original or have been replaced in kind to maintain the historic building appearance. They all contribute to the historic character of the building. Stucco finish over heavy, load-bearing masonry walls and the brick cap accents on the chimneys and site walls contribute to the character defining features. Exposed wood framing elements from the heavy wood headers over windows to the projecting structural members and rafters are character defining, as are the wood shingles with their reddish brown painted finish. An additional character defining feature is the horizontal line rhythm created in the wood shingles by doubling up every fifth or sixth shingle course. Original paint colors - peach exterior walls, dark brown windows sash and dark brown window headers - contribute to the character of the building.

Openings. The rhythm, size and "punched" appearance of the window and door openings is an important contributor to the character of the building. The window sash themselves were replaced at an unknown date, and although they generally retain the double hung sash configuration seen in historic photos, they are not contributing features. The remaining original wood window intact on what is now the interior of the building is a contributing features to the character of the building and should be protected as an example of original craftsmanship. Historic exterior and interior doors are contributing historic features.

Interior Materials. Historic plaster wall and ceiling finishes are important character defining features. Exposed trusses in the original the Living Room (now the Hall and Conference Room) are a character defining feature of the design, though they are currently concealed. Many of the materials have been replaced over time and do not contribute to the character of the building, though the layout has been mostly retained and as such is a contributing feature.

Part 2: Treatment and Use

Treatment and Use

The recommended treatment for the 1938 Residence is rehabilitation. Rehabilitation allows for altering a building to adapt to changing or continuing uses while preserving the historic character. This building was originally a residence but was converted to offices and will continue as an office use for the foreseeable future. As such, treatment recommendations need to accommodate alterations necessitated by this change in use which is allowed under rehabilitation.

The room layout of the 1938 Residence has generally remained unchanged however, the use of these rooms has changed and finishes have been replaced in some rooms to accommodate new uses. The general recommended approach in this report is to repair damaged materials and finishes and leave undamaged surfaces in their current state whether they are historic or modern. For cultural landscape recommendations, refer to the CLR produced in conjunction with this HSR.

Recommended Treatments by Feature / Element

Treatment -- Architecture

Architecture - Roofing
Priority: **Minor**
The park replaced the wood shingles in 2016. New shingles should be dipped in the dark reddish stain, used on roofs throughout out the complex, prior to installation to ensure even coating on all faces. New roofing should be installed to match historic detailing, including the double thickness every fifth row of shingles.

Architecture - Flashing
Priority: **Critical**
Flashing which is trapping water should be replaced and new flashing installed which properly drains. All flashing which is missing should be replaced.

Architecture - Gutters
Priority: **Serious**
Accumulation of debris in the gutters should be addressed by semi-annual cleaning to ensure water can flow freely.

Sections of the gutter and downspout which are rusting or damaged should be replaced in kind. All of the gutters and downspouts should be painted.

Architecture - Soffit
Priority: **Minor**
No work is required at this time.

Architecture - Chimney
Priority: **Serious**
Install a cricket at the chimney which is missing one. Flashing should be installed at the base of all the chimneys. Repair areas of failing stucco finish.

Architecture - Exterior Walls - Stucco
Priority: **Serious**
Cracks in the stucco should be repaired. The few areas of delamination should be patched and painted.

Architecture - Beam Ends
Priority: **Minor**
No work is required at this time.

Architecture - Front Patio
Priority: **Minor**
No work is required at this time.

Architecture - Rear Stoop
Priority: **Minor**
No work is required at this time.

Architecture - Windows
Priority: **Minor**
Window 101: No work is required at this time.

Window 102: No work is required at this time.

Window 103: No work is required at this time.

Window 104: No work is required at this time.

Window 105: No work is required at this time.

Window 106: No work is required at this time.

Window 107: No work is required at this time.

Window 108: No work is required at this time.

Window 109: No work is required at this time.

Window 110: No work is required at this time.

Window 111: No work is required at this time.

Window 112: No work is required at this time.

Architecture - Doors
Priority: **Minor**
Door 101: No work is required at this time.

Door 102: No work is required at this time.

Door 104: No work is required at this time.

Door 105: No work is required at this time.

Door 107: No work is required at this time.

Door 108: No work is required at this time.

Architecture - Interior Finishes
Priority: **Minor**
Hall (101): Repair the crack at door header and ceiling. Replace the carpet flooring. If work is done in this space, consider restoring the original ceiling configuration with exposed trusses.

Conference (102): No work is required at this time. If work is done in this space, consider restoring the original ceiling configuration with exposed trusses.

Office(103): Minor cracks in the ceiling should be repaired. Nail holes in the walls should be filled and the damaged panel on the east wall should be repaired. Carpet flooring should be replaced.

Hall (104): Minor crack in the ceiling should be repaired. Carpet flooring should be replaced.

Restroom (105): No work is needed at this time.

Office (106): Repair the superficial cracking on the ceiling. Repaint the walls and replace the carpet flooring.

Closet (107): Repair the superficial cracks on the ceiling and walls.

Closet (108): No work is required at this time.

Office (109): Repair the cracks in the ceiling.

Supply Room (110): Repair the ceiling so the joints between gypsum boards are not visible. Remove visible paint drips from the walls and repaint. Replace carpet flooring throughout. In the northeast corner, repair the subfloor at the previous drain location to provide a sturdy floor surface.

Utility Closet (111): Repair the ceiling so the joints between gypsum boards are not visible. The rusting chimney clean out should be

replaced or the rust removed and the metal finished. Tile flooring should be replaced.

Hall (112): No work is required at this time.

Copy / Supply Room (113): Repair and repaint wood wall paneling. Replace carpet flooring.

Architecture - Code / Life Safety Issues
Priority: **Serious**
A fire sprinkler system is required per NPS Director's Order 58. The design team should ensure it is installed in a way that is not detrimental to the historic fabric.

The IEBC, International Existing Building Code, applies to the repair, alteration, change of occupancy, addition to and relocation of existing buildings. Within this code, work is categorized into Alteration Levels 1, 2 and 3 depending on the amount of work within the building. Additional categories include Change of Occupancy, Additions, Historic Buildings and Relocated Buildings. Requirements of the code are limited to work areas of the project Levels 1-3. This means that Alteration projects are not required to upgrade the entire building per current code, just elements that are within the project work area dependent on the nature of the alteration work. Change of Use projects trigger more thorough upgrades and the building must be brought up to current code requirements for the new use.

Architecture - Accessibility
Priority: **Serious**
NPS office space is located in the Visitor Center and the 1938 Residence. An accessible office space should be provided in the building which is best modifiable to accommodate it. Since an accessible entrance can be provided to the Visitor Center, design modifications to create an accessible office in that building should be explored.

Treatment -- Structural

Structural - Foundation
Priority: **Minor**
No work is required at this time.

Structural - Floor Framing
Priority: **Minor**
No work is required at this time.

Structural - Roof Framing
Priority: **Minor**
If other work is planned in the attic near the transition between the two different roof pitches in the 1948 addition, measures should be taken to strengthen the lower-sloped rafters that are overly notched. Strengthening measures could include clipping the notched rafters to the un-notched rafters or supporting the notched rafters on a dropped ledger that is fastened to the ends of the un-notched rafters.

Structural - Wall Framing
Priority: **Minor**
No work is required at this time.

Structural - Lateral System
Priority: **Minor Typically**
No work is required at this time.

Structural - Load Requirements
Priority: **Minor**
The framing members and overall structural systems meet the load requirements prescribed by the 2012 IEBC.

Treatment -- Mechanical

Mechanical - Treatment Recommendations
Priority: **Minor**
Outside air should be introduced by providing

a duct from the outside into the return air section of the air handling unit. Outside ventilation air is required by International Mechanical Codes and can be met by opening operable windows within each of the rooms. Most rooms have operable windows however, opening these windows during weather extremes is not likely and the lack of ventilation air may cause elevated CO2 levels.

Return air routes from each of the rooms was not provided without keeping doors open. Additional ducted return air grilles should be added to Office (103) and Conference Room (102).

The ductwork system should be replaced in light of the damage that has been incurred by the system over time and the overall poor condition of the ductwork.

Plumbing - Treatment Recommendations
Priority: **Critical**
There is no reduced pressure backflow preventer on the ¾" water line. A backflow preventer should be added to this line.

Fire Protection - Treatment Recommendations
Priority: **Critical**
Provide a wet fire sprinkler system within the building.

Treatment -- Electrical

Electrical - Infrastructure
Priority: **Serious**
The existing infrastructure supporting the 1938 Residence does not currently take advantage of the available 120/208V, 3-Phase service. Existing metering is double metering the main service.

The existing infrastructure should be replaced with a new 3-phase panel to provide additional capacity and functionality for the administrative needs. Metering should be reconfigured such that it is no longer double metered, but rather separately metered if desired by the park.

Electrical - Branch Circuiting
Priority: **Serious**
Existing knob and tube wiring in attic should be investigated and disconnected if still live, and removed. Consider leaving inactive components of the system for historical reference if desired or required by the park.

Electrical - General Power Outlets and Equipment
Priority: **Minor**
Existing devices and equipment appear adequate. Consider additional device locations in areas being utilized for office work if 3-phase infrastructure is provided.

Electrical - Lighting System
Priority: **Minor**
The general lighting within the space utilizes outmoded incandescent lamping, however it is functional for the purposes of the administrative work. Consider replacing lamps with LED when replacement is required. Consider replacement of fixtures with more efficient fixtures for administrative /office type spaces.

Automatic controls are not utilized. Consider replacement of standard switches with occupancy sensing switch devices. Existing spaces are small enough that it would provide sufficient automatic controls.

Emergency lighting fixtures and exit signs are lacking as they currently exist. Existing emergency lighting should be tested and

replaced as required. New emergency lighting and exit signs should be installed for safety within areas as required, notably at the main corridor and exits.

Electrical - Telecommunications
Priority: **Minor**
Existing telecommunications are adequate for the facility use. Potential for additional lines and/or data connections are to be added if required or desired by the park. Any new lines should be provided in conduit per the NPS Standards. Consider providing new conduit for existing lines not currently routed through conduit, specifically in the attic space.

Electrical - Fire and Security Systems
Priority: **Serious**
Coverage is lacking per National Fire Protection Association (NFPA) 72 Section 7.5 and doesn't communicate with the main Fire Alarm Control Panel (FACP) within the Visitor Center. The full system should be replaced for current code compliance and increased safety. Consider tying into the main FACP in the Visitor Center for added functionality and reliability.

The existing security system is limited and does not communicate with the main security equipment located within the Visitor Center. Consider providing new security devices and tying into the existing security system at Visitor Center for added security and functionality.

Electrical - Lightning Protection
Priority: **Minor**
No existing lightning protection system exists. Lightning protection is not a code requirement, but would provide additional protection for the building's equipment and operations. Consider the installation of a lightning protection system if required and desired by the park.

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1958 Residence - Part 1: Physical Description

General Existing Conditions

The 1958 Residence is a one story building with a partial basement. Exterior walls have a stucco finish and are topped by a gable roof with wood shingles. Doors on the north and south side of the house lead into the living spaces and an overhead roll-up door and man door lead into the garage on the west end of the building.

Interior spaces include a Living Room, Kitchen, two bathrooms and three bedrooms on the first floor. A utility room and two store rooms are located in the basement. The building functions as leased park quarters.

Existing Conditions -- Architecture

Architecture – Roofing System

The roofing system generally retains the original slope, overhang, and materials. It is a gable roof with eaves that overhang the building on all sides.

Architecture – Roofing

Roofing is 1/2" wood shingles with a 7 1/2" exposure. Every fifth row of shingles is double thickness which creates a shadow line that highlights the coursing. Shingles are painted a reddish brown.

A variety of plumbing and attic vents penetrate the roof, as does an approximately 12" diameter flue for the pellet stove in the Living Room.



Figure 1-157. Wood shingle roofing and plumbing stacks (NAA, 6/16/2015)

Architecture – Flashing

Painted metal flashing is located at the roof valleys and around the chimney.

Architecture – Gutters

A 1 1/2" painted metal drip edge leads to 3" metal ogee profile gutters which are painted dark brown. Metal 2 1/4" x 3" fluted downspouts, painted tan, outfall at grade.



Figure 1-158. Gutter and downspout (NAA, 6/16/2015)

Architecture – Soffit
Eaves are boxed with painted plywood at the underside of the rafter tails. There is a continuous 2x fascia capped by a 1x3 trim board - all painted.



Figure 1-159. Soffit (NAA, 6/16/2015)

Architecture – Chimney
The chimney is painted stucco over masonry with a parged cap and a clay tile flue.



Figure 1-160. Chimney (NAA, 6/16/2015)

Architecture – Exterior Facade
Exterior finishes are in keeping with the materials on the other historic buildings at the monument.

Architecture – Exterior Walls
Skip-troweled stucco applied over the wood framed walls is painted. Paint sample analysis discovered only the current Light Peach paint color on the stucco. See the Appendix for the full paint report. The junction between the top of the walls and underside of the soffit is closed off with a 1x4 painted trim board. Painted wood slat roof vents are located at the east gable end.

Architecture – Stoops
At the south entrance, there is a concrete landing/stoop accessed via two steps up from the walkway. A concrete pad that sits flush with grade is located at the entrance to the garage at the west door.

Architecture – Exterior Stair
Two concrete steps lead up to the north entrance.

Architecture – Windows
The window sash have been replaced but the original exterior wood frame and trim which is set just proud of the stucco are intact. Interior wood trim appears to be original and is typically 1x3 with a 1 1/8" wood sill and 1x3 wood skirt. Originally, there were 1-over-1 wood double hung wood windows with wood framed screens that hung from hooks on the exterior window frame but these have been removed.

Window 101, 102, 103, 104, 106, 107, 108, and 109: Metal clad wood 1-over-1, double hung windows with insulated glazing. On the interior, the sash has a clear finish. Wood framed storm/screens with metal edges are

fixed in place with wing clips at the exterior and have operable, glazed lower sash.



Figure 1-161. Window 103 (NAA, 6/16/2015)

Window 105: Paired 1-over-1 metal clad wood, double hung windows with insulated glazing separated by a 2" wood mullion. On the interior, the sash has a clear finish. Windows have a wood framed storm/screen with a metal edge fixed in place with wing clips at the exterior and have an operable, glazed lower sash.



Figure 1-162. Window 105 (NAA, 6/16/2015)

Window 106 and 107: Metal clad wood 1-over-1, double hung window with insulated glazing. On the interior, the sash has a clear finish. A wood framed storm/screen with a metal edge is fixed in place with wing clips at the exterior and has an operable glazed lower sash.



Figure 1-163. Window 106 (NAA, 6/16/2015)

Window 110: Large fixed, metal clad wood "picture" sash, flanked by a metal clad wood 1-over-1 double hung windows. Both double hung windows have a metal framed screen at the exterior and glazing in all three sash is insulated. The sash have a clear finish on the interior side. The window has what appears to be new 1x3 painted trim at the exterior.



Figure 1-164. Window 110 (NAA, 6/16/2015)

Architecture – Doors
Exterior doors are non-historic and both doors into the living areas have an exterior screen. Interior doors are generally historic wood doors with a veneer finish.

Door 101: 3'-0" x 6'-8" x 1 3/4" painted metal door with a half lite over recessed panels. A curtain is mounted on the door above the lite on the interior side. Hardware consists of hinges and a doorknob with integral lock. There is a half lite composition wood screen/ storm door on the exterior side. Hardware on the screen door consists of hinges and a lever handle.



Figure 1-165. Door 101 (NAA, 6/16/2015)

Door 102: 3'-0" x 6'-8" x 1 3/4" painted metal door with a half lite over recessed panels. Hardware consists of hinges and a door knob with an integral lock. There is a half lite vinyl clad screen/storm door on the exterior side. Hardware on the screen door consists of hinges and a thumb latch.



Figure 1-166. Door 102 (NAA, 6/16/2015)

Door 103: 9' x 7' metal overhead door with recessed panels. It is a non-historic door on a metal track with a lockable handle.



Figure 1-167. Door 103 (NAA, 6/16/2015)

Door 104: 3'-0" x 6'-8" x 1 3/4" prefinished metal door with a half lite over recessed panels. The half lite has a nine lite applied muntin grille on the interior and exterior. Hardware consists of hinges, a door knob, and deadbolt.



Figure 1-168. Door 104 (NAA, 6/16/2015)

Interior Doors: Hinged doors throughout the house are 2'-6" x 6'-7" x 1 1/4" hollow core doors with a wood veneer finish. Hardware generally consists of brass door knobs and hinges. A chrome latch secures the door to Bedroom 3.



Figure 1-169. Typical interior door (NAA, 6/16/2015)

Sliding closet doors are hung on tracks concealed by painted wood trim above the doors and have a metal track glide at the floor. Doors are 1" painted hollow core with inset 2 1/4" diameter chrome pulls.

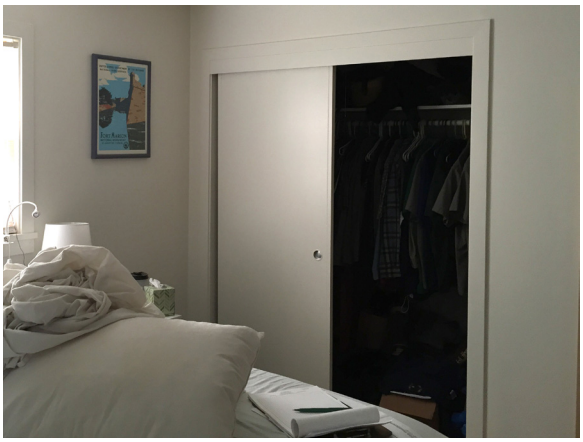


Figure 1-170. Painted wood sliding doors (ADE, 6/16/2015)

Architecture – Interior Finishes

The majority of the finishes in the 1958 Residence are the original finishes.

Living Room (101): Ceiling finish is painted gypsum board. Wall finish is painted gypsum board with a smooth finish. Walls have a painted 3" wood base with a 1" quarter round shoe. At the door opening, the trim is 1" x 2 3/4" painted wood. A pellet stove is located at the east end of the room and behind it the wall has a brick finish. Bricks are red with white and black flecks set in a black grout. Flooring is a wood parquet with 9" x 9" squares set at ninety degrees to create a checkerboard pattern. Each square appears to be a solid tile, not individual pieces. At the east end of the room around the fireplace, there is a 6'-3" x 5'-0" area of quarry tile flooring. Tiles are 6" x 6" red with a dark grout and are 3/4" higher than the adjacent flooring. A 3/4" quarter round trim piece

separates the quarry tile from the parquet flooring.



Figure 1-171. Living room finishes (ADE, 6/16/2015)

1 Car Garage (102): Ceiling within the garage is vaulted and has a 1x wood plank finish. The east wall has a gypsum board finish and the remaining walls have a 1x horizontal wood plank finish. Flooring is concrete and there is a step up at the door on the west side of the Garage.

Kitchen (103): Ceiling finish is painted gypsum board. Wall finish is gypsum board with fiber reinforced plastic (FRP)wainscot installed up to 60" above the floor with white transition strips between the panels and at the top of the wainscot. Wood upper and lower cabinets are mounted on the north and south walls. Cabinets and drawers have blank style fronts with brass pulls. Walls have a painted 3" wood base with a 1" quarter round shoe. Door openings have 2 3/4" wood trim. Where the door has been removed at the opening into the Living Room, the hinge and latch areas have been repaired. The flooring is sheet vinyl with an embossed tile pattern and brass tack strips at the transition.



Figure 1-172. Kitchen finishes and built in cabinets (ADE, 6/16/2015)

Hall (105): Ceiling and wall finish is painted gypsum board. Walls have a painted 3" wood base with a 1" quarter round shoe. Flooring is the same wood parquet as the Living Room.



Figure 1-173. Looking east down the Hall (ADE, 6/16/2015)

Bathroom 1 (106): Ceiling finish is painted gypsum board. Wall finish is painted gypsum board with a 7'-8" FRP wainscot. The room has a 3" wood painted wall base with a 1" quarter round shoe. Built-in accessories include a recessed chrome toilet paper holder and soap dispenser, Painted cabinets are mounted with the top set flush with the ceiling on the east wall. Flooring is 12" x 12" vinyl tile.



Figure 1-174. Finishes in the bathroom (ADE, 6/16/2015)

Closet (107): Ceiling and walls have a painted gypsum board finish. Floor finish is the same wood parquet as in the Living Room. The closet has a built-in wood shelf and closet rod.

Closet (108): At the south end of the Hall there is a built-in closet above four drawers. Shelves within the closet are plywood and the door and drawers are solid plywood with a wood veneer and brass pulls.



Figure 1-175. Built in closet (ADE, 6/16/2015)

Master Bedroom (109): Ceiling and walls have a painted gypsum board finish. Walls have a painted 3" wood base with a 1" quarter round shoe. Trim around the doors is painted wood with a simple profile. Flooring is a cut loop pile carpet.



Figure 1-176. Finishes in the Master Bedroom (ADE, 6/16/2015)

Bathroom 2 (110): Ceiling and wall finish is painted gypsum board. Walls have a painted 3" wood base with a 1" quarter round shoe.

Wall mounted furnishings include, a chrome recessed toilet paper holder, a chrome soap dish, a wall mounted towel rack, and medicine cabinet with a chrome frame and mirror on the door. A painted wood cabinet is mounted flush to the ceiling above the lavatory. Flooring is 12" x 12" vinyl tile.

A shower is built into the south end of the Bathroom and has a poured pan with white and black flecks. Shower walls and ceiling have a 4" x 4" yellow tile finish. Holes in the tiles indicate where a shower door was previously attached, but was removed and replaced with a rod and shower curtain.



Figure 1-177. Finishes and fixtures in the bathroom (ADE, 6/16/2015)

Closet (111): Ceiling and wall finish is painted gypsum board. Flooring is a cut loop pile carpet.

Bedroom 2 (112): Ceiling and wall finish is painted gypsum board. Walls have a painted 3" wood base with a 1" quarter round shoe. Trim around the doors is painted wood with a simple profile. Flooring is the same parquet wood in the Living Room and Hall.



Figure 1-178. Finishes in Bedroom 2 (ADE, 6/16/2015)

Closet (113): Ceiling and wall finishes are painted gypsum board and the flooring is the same wood parquet found throughout the Residence. Walls have a painted 3" wood base with a 1" quarter round shoe. There is a built-in painted wood shelf above a 1 3/4" diameter painted wood closet rod.

Bedroom 3 (114): Ceiling and wall finish is painted gypsum board. Walls have a painted 3" wood base with a 1" quarter round shoe. Trim around the doors is painted wood with a simple profile. Flooring is the same wood parquet found throughout the Residence.



Figure 1-179. Finishes in Bedroom 3 (ADE, 6/16/2015)

Closet (115): Ceiling and wall finishes are painted gypsum board and the flooring is the same wood parquet found throughout the Residence. Walls have a painted 3" wood base with a 1" quarter round shoe. There is a built-in painted wood shelf above a 1 3/4" diameter painted wood closet rod.

Utility Room (001): Ceiling finish is gypsum board which has been unevenly installed. Exterior walls have a plaster finish over concrete. A chimney flue with red brick set in a light colored mortar is located on the west wall. Interior walls have a gypsum board finish. Walls have a 4" rubber base. Floor finish is 12" x 12" glue down vinyl tiles.



Figure 1-180. Finishes and mechanical equipment in the Utility Room (ADE, 6/16/2015)

Store Room (002): Ceiling finish is gypsum board which has been unevenly installed. Exterior walls have a plaster finish over concrete and interior walls have a painted gypsum board finish. The south wall has painted acoustic tiles applied to the upper portion of the wall. Walls have a 4" rubber base. Flooring is 9" x 9" vinyl tiles coated with mastic from a layer of tiles that was applied over these tiles and has since been removed.

A closet is built in along the west wall with bi-fold doors and wood shelving. Within the closet, the ceiling is 30" x 16" fiberboard in a beadboard pattern.



Figure 1-181. Finishes and built in closet in the Store Room (ADE, 6/16/2015)

Store Room (003): Ceiling is the underside of the stair above. Interior walls have a gypsum board finish and the exterior wall has a plaster finish. Flooring is vinyl tiles. The room has built-in plywood shelving which is not painted.



Figure 1-182. Finishes and fixtures in Store Room (003) (ADE, 6/16/2015)

Architecture – Stairs

Stair No. 1: This stair leads from the first floor down to the basement. Steps have a 7 1/4" rise and twelve 10" treads with a green closed loop carpet finish. Carpet was removed from the bottom two steps, revealing the carpet pad at the time of the site visit. There is a 6" stringer with a clear finish on both sides of the stair. A 2 1/4" diameter handrail is mounted with brass brackets on a 1 x 3 1/2" cleat on the north wall at 29" above the nosing.



Figure 1-183. Looking up Stair No. 1 (ADE, 6/16/2015)

Architecture – Code/Life Safety Issues

The 1958 Residence is a one-story, wood frame building with adobe veneer exterior. The building has a partial basement. Internal walls and roof structure are wood framed.

<u>Occupancy</u>
R1
S

Construction Type
VB non-sprinkled

Area
Basement 405
First Floor 1515

The 1958 Residence is being used primarily as a residence, with a portion of the structure used as storage by the park. Its current status as a single family dwelling qualifies it for review under the 2012 International Residential Code (IRC). It is a 1,515 sf, one story structure with a 406 sf partial basement.

The stair to the basement meets current residential code due to the 10" tread and 7 1/2" rise. Stair 104 does not have a landing at the top of the stair. As the door does not swing over the stair, and the stair is interior, the stair and door is permissible per the code.

Architecture – Accessibility
ANSI A117.1 2003 is the guiding document for accessibly for buildings owned by the NPS. The south door is accessed from a walkway with two steps up to a landing with an additional step up at the door. The north entrance is accessed via two steps up from grade. Neither exterior door has accessible lever style hardware. The north entrance lacks the minimal approach dimensions for accessibility. Due to these factors, neither door meets accessibility requirements.

Interior doors generally do not have thresholds but they are narrower than permitted for an accessible opening. The majority of the doors do not have accessible lever hardware installed.

There is no accessible access to the basement. Neither bathroom 106 or 110 is accessible.

Existing Conditions -- Structural

Structural - General System Description
The 1958 Residence is an approximately 1,500 square foot one-story structure with a partial basement. It is constructed of conventional wood framing with a CMU and concrete foundation. The 57' by 27' residence remains in its original state with no major additions or structural modifications. The following is based on field observations and the original 1957 drawings of the building.



Figure 1-184. Southeast corner of the 1958 Residence (IRG, 06/16/2015)

Structural - Foundation
The foundations of the 1958 Residence consist of reinforced CMU foundation walls and reinforced concrete footings. A majority of the footprint is unexcavated with only a 16' by 31' full-height basement below the Kitchen and Bathrooms #1 and #2.

Below the wood-framed walls, the foundation stem walls are constructed of reinforced 8" CMU units. These CMU walls are reinforced with full-height #4 vertical bars spaced at 48" on center and #4 footing dowels spaced at 48" on center extending 4'-6" vertically into

the wall. The walls are reinforced horizontally every other course with #9 ladder type joint reinforcing. At the top of each CMU wall is a bond beam reinforced with two #4 continuous horizontal bars. The exterior foundation walls extend the full height of the basement while the interior walls only extend to crawl space grade level on the south side of the building. At the window well openings in the CMU foundation walls, a concrete sill is poured across the bottom of each opening (See Figure 1-185). These CMU walls are coated in stucco.



Figure 1-185. Concrete sill beam beneath opening in basement CMU wall (IRG, 06/16/2015)

Beneath the CMU stem walls, 9" thick continuous footings constructed of reinforced concrete support the structure. The width and reinforcing of the footings vary depending on the location in the building. They range from 1'-0" to 2'-4" in width. The 1'-0" wide foundations are reinforced with two #4 continuous horizontal reinforcing bars while everything wider is reinforced with three #4 continuous horizontal reinforcing bars evenly spaced. The 2'-4" wide footing has additional #4 bars at the top spaced at 10" on center running perpendicular to the continuous reinforcing bars.

Structural – Floor Framing

The basement floor is an approximately 4" thick concrete slab on grade reinforced with wire mesh. There is a 4" gravel bed below the slab. The slab below the interior stairs; north partition wall thickens to 13" deep.

The first floor is framed with 2x8 joists spaced at 16" on center running north to south. The joists span from a 2x6 plate atop the exterior CMU foundation walls to a triple 2x10 girder running east to west along the middle of the building where the opposing joists lap. The 2x6 plate is anchored into the wall with 1/2" diameter by 9" long anchor bolts spaced at 4' on center. 1x3 x-bridging is placed between the joists at their mid-span. Between the joist ends both at the wall and the girder, 2x8 blocking exists. The blocking flush to the exterior walls and centered over the dropped girder. The girder is supported by 6x6 wood posts that are spaced at 6' on center and they are connected with post caps. These posts are anchored into the bond beam of the interior wall running north to south with a 3/4" plain bar dowel. At the stairs where the joists are interrupted, a 2x4 at 16" stud wall to the north of the stairs supports the joists. Below the Master Bedroom, a triple 2x8 girder runs in the east-west direction providing support for the joists spanning from the main girder and from the north exterior wall. This girder is supported by a pressure-treated 6x6 stub post and a 1'-8" square by 9" deep concrete pier reinforced with wire mesh. The post is tied to the pier with a 1/2" diameter by 9" long dowel. The first floor is sheathed with 5/8" plywood below the finished flooring.

Structural – Roof & Ceiling Framing

The gable roof framing of the 1958 Residence does not appear to have been altered since its original construction. The 2x6 rafters

spaced at 16" on center are sheathed with 1x6 horizontal sheathing and generally span at a 10 on 12 slope from a double 2x top plate on the exterior north and south walls to the ridge or the 2x8 hips (See Figure 1-186).



Figure 1-186. Rafters framing into the 2x8 hips (CLB, 06/17/2015)

The only exception is at the gabled dormer at the northeast corner of the 1958 Residence where the rafters switch direction to span from east to west. At each of the ridge locations, there is a 3x ridge beam rather than the 3" solid blocking called out in the original drawings. (See Figure 1-187).



Figure 1-187. Main ridge condition including the 3x ridge between rafter pairs and the 2x4 cripple stud wall (CLB, 06/17/2015)

At the intersection of the two hip beams and the dormer ridge, a 2x6 beam supports the node with four nails. The 2x6 beam extends back south to the center of the building and is supported by a 3x cripple post about 2' south of the hip beam node and a header in the 2x4 cripple stud wall below the main ridge of the building (See Figure 1-188). It is unknown if the ceiling joist below the 3x post is bolstered.



Figure 1-188. 2x6 header between studs in the 2x4 cripple stud wall below the ridge of the building. The header supports the 2x6 beam which supports the intersection of the two hip beams and the ridge of the dormer (CLB, 06/17/2015)

In the 2x4 at 16" cripple stud bearing wall, the studs are aligned with the rafters. The wall has a single 2x top plate that is notched at each rafter and is supported by a single 2x bottom plate spanning across the top of the ceiling joists.

Around the chimney at the west end of the building, the opening is framed with 2x6 headers to receive the rafters in the area, but there is a several inch gap between the chimney and the nearest full-length rafter (See Figure 1-189).



Figure 1-189. Roof and ceiling framing around chimney at the west of the building (CLB, 06/17/2015)

Above the first floor, the 2x6 ceiling joists span in the north to south direction from the exterior wood-framed 2x4 walls to the interior 2x4 walls. Each ceiling joist is 14' long so there is a section at the center of the building where the ceiling joists lap for roughly 2'-4" (See Figure 1-190).



Figure 1-190. Bottom of cripple stud wall supported by the ceiling joists. Note the ceiling joists lap just to the left of the stud wall (CLB, 06/17/2015)

At the ends, the joists are nailed to their lapped pair with two 16d nails. Running parallel to the ridge of the building on the south side of the attic is a 2x6 beam at the midpoint between the ridgeline of the building and the south wall. It is speculated that this 2x6 beam supports 2x2 hangers located roughly at every other ceiling joists that extend below the ceiling joists to support the dropped ceiling below (See Figure 1-191).



Figure 1-191. 2x6 beam in the attic on the south side of the ridgeline from which the ceiling below is hung from 2x2 hangers (CLB, 06/17/2015)

The attic ceiling beam is only necessary on the south side of the ridgeline because of the longer span compared to that of the north side.

Structural – Wall Framing

All of the walls are wood framed with 2x4 studs spaced at 16" on center. Based on the depiction in Section AA on Sheet 2 of the 1958 drawings of the building, all interior walls are sheathed with 1/2" thick gypsum board on both sides while the exterior walls are sheathed with 1/2" gypsum sheathing on the interior face and 3/4" gypsum sheathing on the exterior face behind the 1" stucco layer and wire lath.

Structural – Lateral System

The lateral force resisting system consists of the roof and floor diaphragms and the interior and exterior wood walls. The framed walls rely on the gypsum sheathing to transfer shear forces through the wall and down to the foundations.

Structural – Load Requirements

The load requirements for the 1958 Residence are based on the type of occupancy and geographical location of the building. The required floor live load capacity per the 2012 IEBC for residential occupancies is 40 pounds per square foot (psf) and for garages it is also 40 psf.

The ground snow load required for Scotts Bluff National Monument per Figure 1608.2 in the 2012 IBC is 20 psf. This ground snow load translates to a flat roof snow load on the 1958 Residence of 20 psf per ASCE 7-10, Minimum Design Loads for Buildings and Other Structures, with consideration to wind exposure, thermal condition, and importance factor. The sloped roof snow load is the same as the flat roof snow load because of the rough surface of the shingled roof. The Code required minimum roof live load of 20 psf governs the analysis.

Existing Conditions -- Mechanical

Mechanical – Physical Description

The mechanical system for the building is a gas fired heat, DX cooling coil, ducted supply and return system. The furnace is located in the basement of the building and the majority of the ductwork is also located in the basement.



Figure 1-192. Furnace System (DMD, 6/16/2015)

Supply air is ducted up to baseboard floor registers on the first floor.



Figure 1-193. Typical baseboard supply register (DMD, 6/16/2015)

Sidewall mounted registers on the duct provide conditioned air to the basement.



Figure 1-194. Supply ducting in basement (DMD, 6/16/2015)

The furnace is a Lennox G1404-60-20 and has a cooling coil mounted directly on top, Lennox model C16-31Q-1FF. The furnace is a high efficiency furnace and the combustion air and flue vent are piped out of the building via PVC pipes up an old chimney.



Figure 1-195. Venting pipes out through chimney (DMD, 6/16/2015)

The mechanical system also has an inline humidifier located on the return air duct side of the furnace. The humidifier is an AutoFlo Model 97 and a 6" duct is fed from the supply side of the furnace into the humidifier. There is a smoke detector on the return side of the furnace upstream of the humidifier.



Figure 1-196. Humidifier in ductwork (DMD, 6/16/2015)

The outdoor condensing unit is located on the east side of the building outside the kitchen. The condensing unit is a Lennox Model 13ACD-030-203-13 and Serial #1912E55846. Based on model numbers, the mechanical system is a 2.5 nominal ton air conditioning unit manufactured in 2012. The condensing unit is an R-22 refrigerant unit.



Figure 1-197. Outdoor Condensing Unit (DMD, 6/16/2015)

The rooms on the first floor have baseboard floor registers that are connected to the furnace supply ductwork. The floor registers are equipped with volume dampers to adjust the airflow at the individual units. However, the adjustment is done by a little knob on the front which is difficult to operate.



Figure 1-198. Baseboard damper knob (DMD, 6/16/2015)

There is a programmable thermostat located in the hallway just off the kitchen which provides the control for the furnace system.

In the Living Room is a pellet stove located where a previous wood stove existed. The stove is vented to the outside via a 4" round duct painted black. There is a thermostat located on the wall that controls the pellet stove.



Figure 1-199. Pellet Stove (DMD, 6/16/2015)



Figure 1-200. Thermostat for pellet stove (DMD, 6/16/2015)

The bathrooms are equipped with small exhaust fans ducted directly to the outside.



Figure 1-201. Bathroom exhaust fan (DMD, 6/16/2015)

Plumbing - Physical Description

The domestic cold water for the building enters in the basement behind the water heater on the north wall. The line is a ¾" line and provides all the water to the building fixtures including a kitchen sink, clothes washer hook-up, humidifier, two water closets, two lavatories, one shower, and one

tub/shower combination. The water line does not contain a reduced pressure backflow preventor.



Figure 1-202. Water entry and shut off (DMD, 6/16/2015)

The water line located in the basement has had several repairs over the years with different pipe materials. The piping materials include copper and PEX.



Figure 1-203.PEX tubing to water softener (DMD, 6/16/2015)

Domestic hot water is provided to the fixtures via an electric storage tank water heater located in the basement. The water heater is State Industries Model #ES652DORT and Serial #1129J004244. The water heater is a 50 gallon capacity with a 4,500 watt electrical heating element.



Figure 1-204. Water heater (DMD, 6/16/2015)

There is also a water softener located in the basement adjacent to the water heater. The water softener is a Morton System Saver.



Figure 1-205. Water softener (DMD, 6/16/2015)

There is a floor drain located near the furnace and water heater where the condensate drain from the air conditioning unit is piped to indirect drain along with a drain line from the high efficiency furnace system.



Figure 1-206. Floor drain in basement (DMD, 6/16/2015)

The waste line from this floor drain is routed to a sump pump located in the floor of the basement. The sump pump then pumps the water up to ceiling level and connects to the main waste line leaving the building to the east.



Figure 1-207. Sump pump (DMD, 6/16/2015)

The main waste line for the building exits to the east and is a 4" cast iron line. Over the years there have been repairs on the line as evidenced by small sections of pipe repairs.



Figure 1-208. Main waste line collection point (DMD, 6/16/2015)



Figure 1-209. Main waste line exit point (DMD, 6/16/2015)



Figure 1-210. Repairs to waste line (DMD, 6/16/2015)

There are two bathrooms on the main level of the building. Both bathrooms contain a water closet and lavatory. Bathroom 2 contains a

stand-up shower while Bathroom 1 contains a tub and shower.



Figure 1-211. Bathroom 2 (DMD, 6/16/2015)



Figure 1-212. Bathroom 2 shower (DMD, 6/16/2015)

The gas line for the building is located on the south side and provides natural gas to the furnace located in the basement.



Figure 1-213. Gas meter (DMD, 6/16/2015)

Fire Protection System - Physical Description
There is no wet fire protection system within the building.

Existing Conditions -- Electrical

Electrical – Infrastructure
Roosevelt Public Power District (RPPD) is presently the electrical utility provider for electrical services routed to the main gear at the Maintenance Building. Refer to the 2016 Cultural Landscape Report for more information. The main gear, housed in the Maintenance Building and also described within that section of this report, provides distribution to the 1958 Residence via a 100Amp, 2-Pole breaker. From the 100A breaker in the main gear, an existing feed is routed through an interior meter adjacent to the main gear, then underground to a 100A, 120/240V Single Phase Panel located within the main hallway of the 1958 Residence.



Figure 1-214. Existing 1958 Residence 100A Power Panel (JB, 6/16/2015)

The panel is a Schneider Electric QO load center, 24 circuit, 100 amp, 240/120V, single phase panel. Loads indicated on the panelboard directory include connections for an electric water heater, dryer, kitchen appliances, an air conditioning unit, and general power and lighting circuits. There are two bussed spaces available within the panel, but 22 of the 24 circuits are currently being utilized. Grounding for the structure was not observed.

Electrical – Branch Circuits

The majority of the existing branch circuit wiring existing within the 1958 Residence is routed through the existing walls, and could not be observed. The exception is within the basement where recent additions are surface mounted within steel, EMT, conduit.



Figure 1-215. Existing brand circuiting is both concealed within existing walls, and routed within surface mounted EMT (JB, 6/16/2015)

Electrical – General Power Outlets and Equipment

Typical throughout the 1958 Residence, 15 and 20 amp duplex receptacles exist, with most locations recessed within existing walls, mounted typically 18" above finished floor. Receptacles located above counter within the restrooms and kitchen are GFI protected. The kitchen receptacles serve standard kitchen appliances, including an electric oven/range, dishwasher, refrigerator, microwave, and garbage disposal. Power is provided within the basement for a washer and dryer as well.

Receptacles located throughout the living area utilize 6-outlet wall taps. Surface mounted plugmold is utilized along the south wall of the Living Room as well as the north and east walls of the bedrooms, all mounted 18" above finished floors, with single outlets spaced at 12" on center.



Figure 1-216. Existing plugmold within Living Room (JB, 6/16/2015)

Electrical – Lighting Systems
Most of the historic light fixtures were replaced by fluorescent wrap-around fixtures as a result of rehabilitation and remodel work completed in the residence. The remaining historic fixtures appear to include a single pendant mounted chandelier located above the dining area within the Living Room, two surface mounted fixtures located within the Hall, a surface mounted fixture in the stairwell, and surface mounted fixtures within the bedrooms, which all utilize screwbase compact fluorescent lamps.

The lighting fixtures within the living space are floor lamps utilizing both standard and switched receptacles. Surface mounted fluorescent wrap-arounds are utilized within the kitchen area. Fans with integral lighting, as well as multi-lamp screw-base vanity fixtures, are utilized within the restrooms. A combination of porcelain screw-base fixtures with compact fluorescents, and surface mounted strip lights, are utilized within the basement of the residence.

Existing lighting controls within the residence consist of standard on/off wall switch control, with one dimmer knob for dimming control of the existing pendant over the dining room area.

Electrical – Telecommunications
The existing telecommunications service to the residence is from the main server located in the basement of the Visitor Center. Data and phone devices are located throughout the residence, typically one per room.

Electrical – Fire Alarm and Security System
The existing fire alarm system within the residence consists of entirely standard residential combination carbon monoxide and smoke detectors, with one located in the Living Room, Kitchen, each of the bedrooms, and in the basement.

The security system at the residence consists only of a wall mounted motion-activated light mounted adjacent to the south entry door.

Electrical – Lightning Protection
No lightning protection is installed on the building, and there is no surge protection on the existing electrical system.

Existing Conditions - Hazardous Materials

Hazardous Materials - General Description
See the full Hazardous Materials Evaluation by Landmark Environmental in the Appendix.

Asbestos Assessment
The 1958 Residence was visually reviewed and samples were taken at locations of potential asbestos containing building materials. Bulk materials samples were collected of a composite core which included all layers within the suspected asbestos containing material (ACM). Samples were then sent to Reservoirs Environmental, Inc. for testing.

Lead Containing Paint
The lead containing paint inspection included a visual inspection and sampling of the structure. Paint chip samples were submitted to Reservoirs Environmental, Inc. for testing using the Atomic Absorption / Inductively Coupled Plasma protocol to determine lead content.

Additionally, soil grab samples were collected to determine if lead was present at concentrations above applicable regulatory screening in soils at the drip line of the building.

Moisture and Microbial Evaluation
Landmark performed a visual assessment for microbial growth and conducted a moisture survey of suspect porous building materials utilizing a moisture meter.

Biological
A visual survey was performed for any indications of potential biological hazards. The inspector also interviewed staff regarding their knowledge of any existing conditions.

General Condition Assessment

Depending on the element, the 1958 Residence is in good to fair condition - requiring repairs or replacement of some exterior features and repairs to a few interior elements. Mechanical and electrical systems need repairs or replacement to some system elements.

Condition Assessment -- Architecture

Architecture – Roofing System
Condition: Fair to Poor
In general, the roofing system is in fair to poor condition with many of the elements requiring replacement or repair.

Architecture – Roofing
Condition: Poor
Wood shingles are in poor condition with failing paint across the roof and moss growing at the ends. Shingles have overlapping gaps, and on the east end some of the shingles are broken.



Figure 1-217. Deteriorated wood shingles (ADE, 6/16/2015)

Architecture – Flashing
Condition: Good
Flashing is in good condition.

Architecture – Gutters
Condition: Fair
Gutters are in fair condition with peeling paint and rust. Pine needles fill up the majority of the gutters. Downspouts are in good condition.

Architecture – Soffit
Condition: Fair
Soffit is in fair condition with some water damage at valley termination points.

Architecture – Chimney
Condition: Good
Chimney is in good condition.

Architecture – Exterior Facade
Condition: Good
Generally, the exterior facade is in good condition with deterioration to select finishes.

Architecture – Exterior Walls
Condition: Good to Fair
Stucco finish on the exterior walls is in good condition. Paint is peeling off the wood slat vent for the attic.

Architecture – Stoops
Condition: Good
Concrete at both the north and west stoops is in good condition.

Architecture – Exterior Stair
Condition: Good
The stair is in good condition.

Architecture – Windows
Condition: Good
Windows are generally in good condition.

Window 101: Good condition.

Window 102: Good condition.

Window 103: Fair condition with cracked trim and deteriorating paint.

Window 104: Good condition.

Window 105: Good condition.

Window 106: Good condition.

Window 107: Good condition.

Window 108: Good condition.

Window 109: Good condition.

Window 110: Fair condition with the sealant around the large center glazing punctured and pooling. The exterior screen sash are held in place by electrical tape.

Architecture – Doors
Condition: Good
The doors are generally in good condition, with the exception of the exterior screen/ storm doors.

Door 101: The exterior door is in good condition. The storm/screen door is in fair condition with the paint peeling off in sheets.

Door 102: The exterior door is in good condition. The storm/screen door is in fair condition with the cladding starting to peel off.

Door 103: Good condition.

Door 104: Good condition.

Interior Doors: Good condition.

Architecture – Interior Finishes
Condition: Good to Fair
Generally the building has been maintained over the years and finishes are in good to fair condition. A few, select finishes are in poor condition.

Living Room (101): Ceiling finish is in good condition. Gypsum board wall finish is in good condition though there are small holes where pictures were hung. The brick wall finish is in fair condition. The parquet flooring is in fair condition with some visible wear. Tile flooring is in fair condition with stained and dirty grout.

1 Car Garage (102): Ceiling and wall finishes are generally in good condition with water staining in a few places. The concrete flooring is in good condition.

Kitchen (103): Ceiling finish is in good condition. Gypsum board wall finish is in fair condition with drips in the paint and cracking. The cabinets are in good condition, as is the flooring.

Hall (105): Ceiling and wall finishes are in good condition. Flooring is in fair condition with the finish worn and dulled. There is minor damage to the flooring at the door to Bathroom 1.

Bathroom 1 (106): Ceiling finish is in fair condition with some staining, possibly from moisture. Wall finish is in fair condition with the FRP panels starting to peel off the wall. Sealant between the FRP and bathtub is not evenly applied. Flooring is in fair condition with some gaps.

Closet (107): Ceiling, wall, and floor finishes are in good condition.

Closet (108): Finishes in the closet are in good condition, as are the closet door and drawers.

Master Bedroom (109): Ceiling and wall finishes are in good condition. Carpet flooring is in fair condition.

Closet (111): Ceiling and wall finishes are in good condition. Carpet flooring is in fair condition.

Bedroom 2 (112): Ceiling and wall finishes are in good condition, though there are some nail holes and patching evident. The parquet flooring is in good condition.

Closet (113): Ceiling, wall, and floor finishes are in good condition.

Bedroom 3 (114): Ceiling, wall, and floor finishes are in good condition.

Closet (115): Ceiling, wall, and floor finishes are in good condition.

Utility Room (001): Ceiling finish is in fair condition, as it was not installed to expected construction standards - flashing around the pipe penetrations is roughly done and the ceiling is not painted. Walls are in good condition. The flooring is in poor condition with the pattern almost worn through.



Figure 1-218. Rough finish around a pipe in the Utility Room (ADE, 6/16/2015)

Store Room (002): Ceiling finish is in fair condition, as it was not installed to expected construction standards - flashing around the pipe penetrations is roughly done and the ceiling is not painted. Walls are in good condition. The flooring is in poor condition with mastic over the tiles and some of the 9" x 9" tiles missing, revealing black mastic underneath. Ceiling in the closet is in fair condition with some staining from a leaking pipe.

Store Room (003): Ceiling, wall, and floor finishes are in good condition.

Architecture – Stairs
Condition: Poor
Carpet finish on the stair is worn and missing at some steps.

Architecture – Code/Life Safety Issues
Condition: Fair to Poor
The 1958 Residence generally meets code requirements of the IRC.

There is no code requirement for a fire suppression system in this building but NPS Director's Order 58 section 9.1.8 requires

consideration for fire suppression of structural fires "to prevent loss of human life and minimize damage to historic property resources." However, it acknowledges that when these requirements would require work that would damage the historic character and integrity of the building then other changes will be made in lieu of altering the building. If the park decides a fire suppression system is required, they will need to work carefully with the design team to ensure it is installed in a way that is not detrimental to the historic fabric.

Architecture – Accessibility
Condition: Poor
The current configuration does not meet ANSI standards. The current configuration does not provide an accessible entrance, many doors are narrower than the required width (32" clear), and knob style hardware remains at most doors. Restrooms are not compliant.

Per ABA section F233.4.1.2, which regulates the required percentage of accessible housing, since this is the only residence in the park if it is updated then the unit will need to be made accessible throughout.

Condition Assessment -- Structural

Applicable Codes:
The code references used for this assessment include the 2012 IEBC and ASCE 7-10 Minimum Design Loads for Buildings and Other Structures.

Structural – Foundation
Condition: Good
The condition of the 1958 Residence's foundation is good. There are no major signs of deterioration or displacement such as bowing of the foundation walls. However, there are potential problems that may arise if the water infiltration issue is not addressed. While on site, standing water covered the entire basement floor (See Figure 1-219).



Figure 1-219. Standing water in the east portion of the basement (IRG, 06/16/2015)

It is understood that water is entering the building through the area wells. If this water infiltration issue is not remedied, permanent damage to finishes or the formation of mold in the framing and finishes could occur.

Structural – Floor Framing
Condition: Good
The floor framing of the 1958 Residence is in good structural condition. There are no signs of deterioration or deflection. The members are adequately sized for the Code required 40 psf live load.

Structural – Roof and Ceiling Framing
Condition: Fair
The residence's roof framing system is in fair condition overall. There are no visible signs of distress on the exterior or interior of the building, but there are a few areas that could be improved if other work is planned in the area. At the chimney, the space between the brick and the nearest rafter allows for lateral

movement of the chimney structure. This was likely intentional for two reasons: to separate the flammable wood framing from the potentially hot masonry around the flue and to allow for differential vertical movement between the two systems (See Figure 1-220).



Figure 1-220. A gap exists between the brick chimney face and the nearest rafter (CLB, 06/17/2015)

But, it is possible that the chimney could become unstable during a seismic or extreme wind event or at least damage the roof flashing if it were to move excessively.

Another area of the roof that could be improved if desired concerns the 2x6 beam supporting the node of the two hip beams (See Figure 1-221).



Figure 1-221. 2x6 support beam where the two hip beams meet. Note the 3x cripple post to the right of the image. It is unknown if this post is properly supported (CLB, 06/17/2015)

It is unknown if the ceiling joist below the cripple post at the north end of the beam has been strengthened to have the capacity to carry the additional point load imposed by the post. At the south end, the 2x6 beam is supported by a 2x6 header between two studs in the 2x4 cripple stud wall (See Figure 1-222).



Figure 1-222. Header in the stud bay supporting the 2x6 extending out from where the hip beams intersect. Note the four nails between the stud and the header through the end grain (CLB, 06/17/2015)

The header is connected to the studs with four nails either end that extend through the side of the stud into the end grain of the header. This connection is performing well despite the end grain nailing.

Structural – Wall Framing
Condition: Good
Although the wall system was not directly visible at the time of the observations due to finishes, the walls appear to be in good condition. There are no signs of deterioration, racking, or bowing.

Structural – Lateral System
Condition: Fair
The lateral stability of the residence is fair. The gypsum board sheathing has less capacity than a traditional plywood sheathed shear wall and the nailing pattern to each stud and along the boundaries is unknown. In the attic, there are several places where the lateral system has potential discontinuities. There are no elements in place in the east-west direction to transfer the lateral loads along the cripple stud bearing wall below the ridge. With only a single top plate, there is no mechanism to carry shear loads across the splices in this member which is traditionally solved by staggering the splices of the two top plates. Across the face of the wall, there are no elements such as sheathing or diagonal bracing to transfer the loads between the studs in the wall (See Figure 1-223).



Figure 1-223. 2x4 cripple stud wall running in the east west direction of the attic beneath the ridgeline. Note the lack of lateral bracing on the face of the stud wall (CLB, 06/17/2015)

Finally, there are no elements such as blocking between the ceiling joists below the base of the attic cripple wall and the top of the wall first floor below to transfer the load through the ceiling diaphragm to the first floor wall. Although the aforementioned items are not ideal, their repair is not critical considering the seismic loads are relatively low and the building is merely a private residential building built in a conventional tradition having a history of successes.

Structural – Load Requirements
Condition: Good
The live loads imposed on the structural framing elements of the 1958 Residence are modest, accordant with residential use. The members are of adequate size to carry the loads required by the Code.

A sample was taken from a rafter of the 1958 Residence. Microscopic analysis revealed that the rafters are most likely Southern or Western Yellow Pine. Since the microscopic characteristics cannot reliably be separated between the species, the actual species could possibly be Loblolly pine, Shortleaf

pine, Longleaf pine, Slash pine, Pitch pine, Ponderosa pine, or Lodgepole pine. Western Woods species group was chosen for analysis purposes since it provides the most conservative values of the possible species. Due to several stamps visible on the lumber members in the attic, the grade used for analysis is construction grade (See Figure 1-224).



Figure 1-224. Grade stamp visible on a rafter in the 1958 Residence (CLB, 06/17/2015)

The allowable roof live or snow load capacity of the residence rafters spanning from the top of the wall to ridge is approximately 15 psf compared to the 20 psf load required by Code. Since the members are less than 30% overstressed, there are no signs of deterioration or deflection, the assembly does not appear to be dangerous, and the imposed loads are not increasing, the rafters can be considered adequately sized and can remain in use unaltered.

Condition Assessment -- Mechanical

Mechanical – Condition Assessment:
Condition: Fair to Poor
The furnace unit is relatively new along with the outdoor condensing unit. The ductwork located in the basement appears in good condition. However, access to the inside of the duct was not possible. With floor mounted baseboard supply registers, it is anticipated that the inside of the ductwork has a fair amount of dust and debris collected over the years.

The exhaust fans in the bathrooms are older and in poor condition.

The pellet burning stove is in good condition.

Plumbing – Condition Assessment:
Condition: Good to Poor
The copper water lines are in fair condition and the PEX water lines are in good condition.

The electric water heater is in good condition.

The waste line is in poor condition.

The water softener is in good condition.

The sump pump is in good condition.

Fire Protection - Condition Assessment:
Condition: N/A

Condition Assessment -- Electrical

Electrical – Infrastructure
Condition: Poor
The existing panel serving the 1958 Residence does not take advantage of the available 120/208V, 3 phase power available at the site, but the capacity is sufficient for the existing loads at the 1958 Residence currently utilized as the Ranger Residence. Existing metering of the 1958 Residence as it relates to the service from the Maintenance Building needs to be reconfigured so utility meters do not double metered loads. Grounding

for separate structures as required under National Electric Code 2014 (NEC) Section 250 needs to be provided.

Electrical – Branch Circuiting
Condition: Fair
The existing panel serving the 1958 Residence is adequate for residential uses, as confirmed in discussions on site with National Park Service staff.

Electrical – General Power Outlets and Equipment
Condition: Fair
Existing devices and equipment appear to be in operating condition and are located throughout the residence. Some additional locations may be considered for areas being utilized for office work, however the existing locations and the provisions of the 6-outlet taps have been adequate for current operations per discussions with National Park Service staff on site.

Electrical – Lighting Systems
Condition: Fair
Per on site discussions with the National Park Service staff, existing lighting fixtures utilized throughout the residence are adequate for most of the functions performed within the building. However, one area of the living space appears to be utilized as an office space, and the existing floor lamps do not provide the light levels that would typically be utilized for such functions.

Electrical – Telecommunications
Condition: Fair
The existing service to the 1958 Residence is adequate for existing phone and computer connections being utilized for employee use.

Electrical – Fire and Security Systems
Condition: Poor
The existing fire alarm system, including detection and notification, does not appear to have adequate coverage in the basement per National Fire Protection Association (NFPA) 72 Sections 7.5 and 11.5. The system doesn't communicate with the main fire alarm system at the Visitor Center.

Security measures are virtually non-existent at this building, and do not communicate with the main security system at the Visitor Center.

Electrical – Lighting Protection
Condition: Poor
There is no existing lightning protection system at the 1958 Residence.

Condition Assessment - Hazardous Materials

Hazardous Materials - General Description
Condition: Fair
See the full Hazardous Materials Evaluation by Landmark Environmental in the Appendix.

Asbestos Assessment
ACM is defined as a material containing greater than one percent asbestos by weight, volume or surface area. Regulations distinguish treatment requirements between friable and non-friable forms of ACM. Test results of samples taken in the building identified the following materials as ACM:

- HVAC duct seam paper (friable) - located on 12" duct on north side of basement.
- Mudded pipe fittings (friable) - located on 1" pipe on north side of basement.

Additionally, roofing materials were not sampled as part of this survey and are assumed to be ACM.

Lead Containing Paint
Lead Based Paint (LBP) is defined as a paint containing 0.5% lead by weight or 1.0 milligram per cubit centimeter by both the EPA and HUD. No samples were determined to contain greater then 0.5% lead concentrations.

The EPA, established screening levels/ cleanup criteria for lead in soils based on direct contact in residential scenarios is 400 mg/kg and none of the samples were above this.

Moisture and Microbial Evaluation
Landmark did not observe visual indications of water intrusion and/or damage within the structure during the time of the site visit.

Biological
No indications of accumulated rodent or bird feces were observed and on-site personnel were not aware of any significant signs of pest intrusion.

Character Defining Features for the 1958 Residence

Mass/Form. The overall shape of the building - its one story rectangular form covered by a gable roof is a character defining feature. Simple, clean lines that are characteristic of Mission 66 era designs are also an important element of the massing.

Exterior Materials. Based on available information, it is likely that the majority of the exterior finishes are historic or replaced in kind. Stucco finish on the exterior walls, painted Light Peach is a character defining features of the building, as are the wood trim and wood shingle roofing. An additional character defining feature is the horizontal line rhythm created in the wood shingles by doubling up every fifth or sixth shingle course.

Openings. The size and rhythm of the window and door openings are important contributing features to the building's character. The window sash themselves were replaced at an unknown date, so they are not contributing features. The layout of the Chicago style window on the south facade is an important feature since it is characteristic of that era of building design. The doors, including the interior doors contribute to the building's character.

Interior Materials. Historic wood parquet flooring is a character defining feature of the building. Built-in elements, such as the cabinet at the east end of the Hall, are important character defining features. Remaining historic light fixtures - surface mounted fixtures in the Hall, Stairwell and Bedroom and the pendant chandelier in the Living Room - contribute to the character of the building.

Part 2: Treatment and Use

Treatment and Use

The recommended treatment for the 1958 Residence is rehabilitation. Rehabilitation allows for altering a building to adapt to changing or continuing uses while preserving the historic character. This building was originally a residence and continues to serve as a residence however this could change depending on future park needs.

The layout of the 1958 Residence has generally remained unchanged. However, finishes have been replaced or damaged over the years. The general recommended approach in this report is to repair damaged materials and finishes and leave undamaged surfaces in their current state whether they are historic or modern. For cultural landscape recommendations, refer to the CLR produced in conjunction with this HSR.

Recommended Treatments by Feature / Element

Treatment -- Architecture

Architecture - Roofing
Priority: **Serious**
Replace wood shingles in-kind. New shingles should be dipped in the dark reddish stain, used on roofs throughout out the complex, prior to installation to ensure even coating on all faces. New roofing should be installed to match historic detailing, including the double thickness every fifth row of shingles.

Architecture - Flashing
Priority: **Minor**
No work is required at this time.

Architecture - Gutters
Priority: **Serious**
Accumulation of debris in the gutters should be addressed by semi-annual cleaning to ensure water can flow freely.

Sections of the gutter which are rusting should be replaced in kind. The gutters should be painted.

Architecture - Soffit
Priority: **Serious**
Water damaged areas of the soffit should be replaced in kind.

Architecture - Chimney
Priority: **Minor**
No work is required at this time.

Architecture - Exterior Walls
Priority: **Minor**
The wood slat vent at the attic should be painted.

Architecture - Stoops
Priority: **Minor**
No work is required at this time.

Architecture - Windows
Priority: **Minor / Serious**
Window 101: No work is required at this time.

Window 102: No work is required at this time.

Window 103: Repair the cracked trim and repaint.

Window 104: No work is required at this time.

Window 105: No work is required at this time.

Window 106: No work is required at this time.

Window 107: No work is required at this time.

Window 108: No work is required at this time.

Window 109: No work is required at this time.

Window 110: Remove the sealant around

the center glazing and reseal. Replace the screening in the exterior screen sash.

Architecture - Doors
Priority: Minor
Door 101: Remove the peeling paint from the screen door and repaint.

Door 102: Replace the screen door.

Door 103: No work is required at this time.

Door 104: No work is required at this time.

Interior Doors: No work is required at this time.

Architecture - Interior Finishes
Priority: Minor to Serious
Living Room (101): Fill holes where pictures were previously hung. Refinish the parquet wood flooring and clean or replace the grout between the tile flooring.

1 Car Garage (102): No work is required at this time.

Kitchen (103): Remove paint drips, repair cracks in the gypsum board wall finish and repaint.

Hall (105): Repair damage to the wood parquet flooring at the door to Bathroom 1 and refinish the flooring throughout.

Bathroom 1 (106): Repaint the ceiling. Either resecure the FRP panels peeling off the wall or remove and replace the panels. If repairing the FRP, remove existing sealant and reseal the joint between the FRP and bathtub.

Closet (107): No work is required at this time.

Closet (108): No work is required at this time.

Master Bedroom (109): Replace carpet flooring.

Closet (111): Replace carpet flooring.

Bedroom 2 (112): Fill nail holes and paint areas of previous patching.

Closet (113): No work is required at this time.

Bedroom 3 (114): No work is required at this time.

Closet (115): No work is required at this time.

Utility Room (001): Repair or replace the gypsum board ceiling finish, provide proper flashing at pipe penetrations and paint the ceiling. Remove existing flooring and install new vinyl tile flooring.

Store Room (002): Repair the ceiling at ducts and provide proper flashing at pipe penetrations. Ensure the leaking pipe has been repaired and once complete, repaint the ceiling. Remove existing flooring and install new vinyl tile flooring.

Store Room (003): No work is required at this time.

Architecture - Stairs
Priority: Serious
Replace the carpeting on the stairs.

Architecture - Code/Life Safety Issues
Priority: Serious
A fire sprinkler system is required per NPS Director's Order 58. The design should ensure it is installed in a way that is not detrimental to the historic fabric. Any future change in use would need to comply with the current International Existing Building Code (IEBC). The IEBC applies to the repair,

alteration, change of occupancy, addition to and relocation of existing buildings. Within this code, work is categorized into Alteration Levels 1, 2 and 3 depending on the amount of work within the building. Additional categories include Change of Occupancy, Additions, Historic Buildings and Relocated Buildings. Requirements of the code are limited to work areas of the project Levels 1-3. This means that Alteration projects are not required to upgrade the entire building per current code, just elements that are within the project work area dependent on the nature of the alteration work. Change of Use projects trigger more thorough upgrades and the building must be brought up to current code requirements for the new use.

Architecture - Accessibility
Priority: **Serious**
The residence should be modified to address accessibility throughout.

Treatment -- Structural

Structural - Foundation
Priority: **Minor**
No foundation work is required at this time, although the source of the water infiltration should be identified and the basement walls sealed to prevent any structural or architectural damage in the future.

Structural - Floor Framing
Priority: **Minor**
No work is required at this time.

Structural - Roof Framing
Priority: **Minor**
Only minor discretionary treatment recommendations are suggested for the roof framing of the 1958 Residence.

At the chimney, install steel pintles that tie the brick to the wood framing horizontally, but still allow for differential vertical movement. This will help reduce the amount of chimney movement permitted during a wind or seismic event and help minimize damage to roofing materials in the immediate vicinity.

At the horizontal 2x6 beam supporting the node of the two hip beams, there are several suggestions. At the north end of the beam, it is recommended to verify the existence of or provide a beam adequate to carry the point loads from the cripple studs. This most likely involves sistering the existing ceiling joints. At the south end of the beam, it is suggested to add pre-manufactured hangers to the ends of the header at the studs and block solidly between the end of the beam to the adjacent studs.

Structural - Wall Framing
Priority: **Minor**
At the time of investigation none of the wall framing was visible due to finishes. Although there do not appear to be any structural issues, if the finishes are removed, the wood framing members of the wall should be inspected for signs of rot and decay. If found, replacement work may be necessary.

Structural - Lateral System
Priority: **Minor**
Since the lateral loads are relatively low, the following recommendations are suggested for completion if other work is to occur in the area. This is a private residence and if it is continued to be used as such, strengthening of the conventional framing and construction is not triggered.

Since the nailing pattern of the gypsum board is unknown at this time, it would be prudent to either verify that the nailing is adequate to resist the design lateral loads on the building

or provide plywood sheathing along the identified shear walls of the building. If these elements are added, it is also suggested to add holdowns and anchors into the foundations of the building.

In the attic, provide metal straps across the splices in the top plate of the cripple wall running under the ridge of the roof. Also, provide plywood sheathing with adequate boundary nailing to one side of this stud wall or diagonal braces to transfer the lateral loads from the roof to the ceiling diaphragm. Just below this wall, install solid blocking between the ceiling joists to allow for force transfer between the ceiling diaphragm and the shear wall below.

Structural - Load Requirements
Priority: **Minor**
No work is required at this time.

Treatment -- Mechanical

Mechanical - Treatment Recommendations
Priority: **Serious**
Replace existing exhaust fans in the two bathrooms.

Priority: **Minor**
Clean existing supply and exhaust ductwork.

Make manual damper adjustments at the first floor baseboard registers operable by removing built up paint and providing lubrication to the damper axle.

Plumbing - Treatment Recommendations
Priority: **Critical**
There is no reduced pressure backflow preventer on the ¾" water line. A backflow preventer should be added to this line.

Provide a sump pump system for collection and discharge of storm water that enters the basement level during storm events.

Priority: **Serious**
Replace domestic water piping and sanitary waste piping throughout the building.

Priority: **Minor**
Replace bathroom fixtures. Two water closets, two lavatories, one shower, one shower/tub combination, one kitchen sink, and one utility sink.

Treatment -- Electrical

Electrical - Infrastructure
Priority: **Serious**
The existing infrastructure supporting the 1958 Residence does not currently take advantage of the available 120/208V, 3-Phase service. Grounding for the separate structure is not provided.

The existing infrastructure should be replaced with new 3-phase panel to provide additional capacity and functionality for the residence needs. Grounding for separate structures as required under the National Electric Code 2014 (NEC) Section 250 should be provided.

Electrical - Branch Circuiting
Priority: **Minor**
Existing branch circuits appear to be in good condition and adequate for the needs of the residence.

Electrical - General Power Outlets and Equipment
Priority: **Minor**
The existing wire and devices appear to be in good condition and adequate for the needs of the residence. Power strips are used in a few areas. Consider increasing the quantity

and locations of devices for additional convenience.

Electrical - Lighting Systems
Priority: Minor
The lighting within the 1958 Residence relies heavily on the use of table lamps or other plug in lamp sources. While the lighting is adequate per the National Park Staff, consideration should be given to replace existing lighting with new, concealed light sources to allow the building to more easily be used in nighttime hours. Concealed fixed sources should be integrated with period table lamps to provide a light level consistent with that of the period of significance.

At a minimum, consideration should be given to replacing existing lamps within existing fixtures with LED equivalent sources when relamping is required.

Automatic controls are not utilized throughout. Consider replacement of standard switches with occupancy sensing switch devices. Existing spaces are small enough that it would provide sufficient automatic controls.

Electrical - Telecommunications
Priority: Minor
Existing telecommunications are adequate for residential use. Additional lines and/or data connections may be required or desired by the park. Any new lines should be provided in conduit per the NPS. Consider providing new conduit for existing lines not currently routed through conduit.

Electrical - Fire and Security Systems
Priority: Serious
Coverage is lacking per National Fire Protection Association (NFPA) 72 Section 7.5 and doesn't communicate with the main Fire Alarm Control panel (FACP) within the Visitor Center. The system should be replaced for current code compliance and increased safety. Consider tying into the main FACP in Visitor Center for added functionality and reliability.

Security is virtually non-existent in this building. Consider providing new security devices and tying into the existing security system at Visitor Center for security and functionality.

Electrical - Lightning Protection
Priority: Minor
No lightning protection system exists. Lightning protection is not a code requirement, but would provide additional protection for the residence. Consider the installation of a lightning protection system if required and desired by the park.

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Maintenance Shop - Part 1: Physical Description

General Existing Conditions

The Maintenance Shop is a one story building with a stucco finish on the north and east walls of the original building and most additions. On the north elevation of the 1981 addition, the concrete structure does not have an applied stucco finish. The south elevation of the Maintenance Shop is composed of nine bays, most of which have a large overhead door, though a few have infill walls in the opening. Bays serve as parking areas or office/storage for the park maintenance staff.

Existing Conditions -- Architecture

Architecture – Roofing System

In general, the roofing system retains the historic appearance. Additions were roofed with materials that matched those on the original building.

Architecture – Roofing

Roofing is 1/2" wood shingles with 7 1/2" exposure. The roof is a saltbox shape with the peak toward the south, creating a large exposure on the north side. The roof cap is constructed with wood shingles. Photos from the 1940s do not show the doubled shingles every five courses as was present on the other buildings in the complex. A few vent pipes project through the roofing and a skylight is located at the west end of the roof.



Figure 1-225. Wood shingle roofing (KAC, 6/16/2015)

Architecture – Flashing

Painted metal flashing extends 2" below the roof edge.



Figure 1-226. Flashing at the roof edge (KAC, 6/16/2015)

Architecture – Fascia

1 1/2" x 4 1/2" painted wood fascia with a 1 1/2" x 3/4" trim board is located on the east and west roof edges.

Architecture – Soffit

1x painted wood board sheathing is visible between the roof framing members. Nails attaching the shingles project through the wood.



Figure 1-227. Soffit at the east elevation (KAC, 6/16/2015)

Architecture – Exterior Facade
Exterior wall finishes generally match the materials seen in historic photographs.

Architecture – Exterior Walls
Skip troweled stucco applied to masonry walls has a painted finish. Paint sample analysis discovered only the current Light Peach paint color on the stucco. See the Appendix for the full paint report. Stucco is applied to the east and north elevations. Toward the west end of the north elevation, the wall switches to concrete with a layer of polystyrene insulation installed on the exterior side. The insulation only runs from grade partway up the wall, not up to the roof line, and is held in place by nails.



Figure 1-228. Stucco finish on the east facade (KAC, 6/16/2015)

On the south elevation, painted square timber columns on a masonry base with a stucco finish separate the majority of the bays, though areas between additions and the infilled bays have a stucco finish. Paint sample analysis revealed the original color was Red Earth versus the current Saddle Brown color. See the Appendix for the full paint report.



Figure 1-229. Stucco finish and wood columns between the doors on the south facade (KAC, 6/16/2015)

Work was ongoing at the west elevation during the time of the site visit. NPS maintenance staff was recladding the upper section of this elevation with wood lapped siding at the time of the site visit. The concrete foundation extends above grade and polystyrene insulation extends just above grade level. A water barrier was installed over the wall above the foundation.



Figure 1-230. Work in progress on the west facade (KAC, 6/16/2015)

Architecture – Windows
With the exception of the window on the east elevation, the windows are non-historic.

Window 101: 2'-11" x 1'-10" vinyl slider window in the exterior infill wall of the Restroom. Sash and wood trim are white on the interior and the sash are brown on the exterior. Work was being performed to the exterior of this bay during the site visit, so any

exterior trim had been removed. Hardware consists of a thumb lock.



Figure 1-231. Windows 101 (KAC, 6/16/2015)

Window 102, 103 and 104: 2'-11" x 1'-10" vinyl slider windows in the exterior infill wall of Shop Area 2. Trim and sash on the interior are white and the sash are brown on the exterior. Work was being done to the exterior of this bay during the site visit, so any exterior trim had been removed. Hardware consists of a thumb lock.

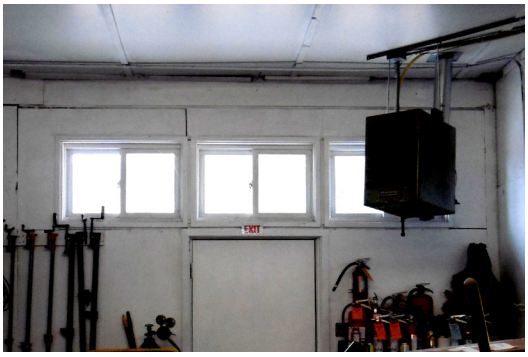


Figure 1-232.Windows 102, 103, and 104 (KAC, 6/16/2015)

Window 105 and 106: Vinyl slider windows separated by a wood mullion. Windows are set in a wood frame. Both the sash and frame are painted white on the interior and brown on the exterior. Hardware consists of a thumb lock.



Figure 1-233. Windows 105 and 106 (KAC, 6/16/2015)

Window 107: Original three hopper, six lite wood sash separated by wood mullions. A painted heavy timber header extends past the window approximately a foot on each side. The wood frame and sash are painted on the interior and exterior. Hardware on each sash is intact and includes two hinges at the bottom and a latch at the top on the interior side.



Figure 1-234. Window 107 (KAC, 6/16/2015)

Window 108: 2'-9" x 2'-9" fixed single lite interior window with a wood frame and trim which are painted white.



Figure 1-235. Window 108 (KAC, 6/16/2015)

Window 109: 1'-2" x 2'-7" interior vinyl hopper window with painted wood trim.

Window 110: 3'-0" x 2'-0" interior sliding vinyl window with a screen and painted wood trim.

Architecture – Doors
Exterior doors have been replaced over the years and consist of overhead doors at most bays and man doors at infilled bays. Interior doors are modern.

Door 101: 3'-0" x 6'-8" painted wood door with two panels below the upper lite. The door has a painted wood frame, trim, and threshold. Hardware consists of three hinges and a doorknob with a lockset.

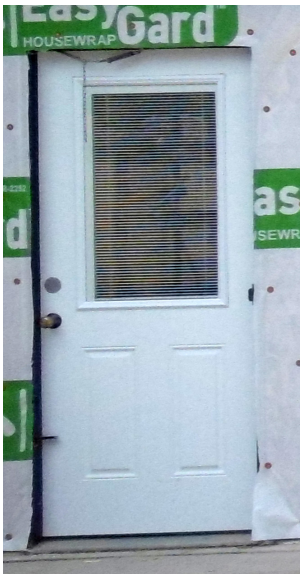


Figure 1-236. Door 101 (KAC, 6/16/2015)

Door 102, 103, 105, 107, 108, 109, 110, 111, 112 and 113: Metal overhead doors with three lites in a horizontal line in the upper third of the door. Doors are all 10'-0" tall with widths ranging from 9'-10" in the original building and first addition, 9'-7" in the second addition, and 11'-0" in the final addition. Doors typically have a handle at the bottom and a handle with a lock at the lower third. Doors have a brown finish on the exterior and are typically unfinished on the interior side.



Figure 1-237. Typical overhead door (KAC, 6/16/2015)

Door 104: 3'-0" x 7'-0" painted wood door with wood frame and trim. Hardware consists of three hinges and a door knob with a lock.



Figure 1-238. Door 104 (KAC, 6/16/2015)

Door 106: 2'-8" x 6'-7" hollow metal door with a plexiglass lite in the upper third. The door has a wood frame and hardware consists of three hinges, a door knob with a lock, and a door closer.



Figure 1-239. Door 106 and Windows 105 and 106 (KAC, 6/16/2015)

Door 114: Wood door in a wood frame, both have a stained finish. Hardware consists of hinges, a door knob, and deadbolt.

Door 115: 2'-11" x 6'-9" wood half lite door with two panels below the 1'-10" x 2'-11" nine lite opening. The door is set in a wood frame with wood trim and has a metal threshold. Hardware consists of hinges, a doorknob, a deadbolt, and a door closer. The door, frame, and trim are painted white.

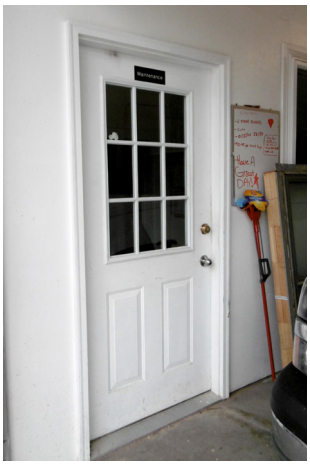


Figure 1-240. Door 115 (KAC, 6/16/2015)

Door 116: 2'-8" x 6'-8" four panel wood door with a wood frame and trim. Hardware consists of three hinges and a door knob.

Door 117: 2'-7" x 6'-9" six panel wood door with painted wood frame and trim. Hardware consists of three hinges and a door knob.



Figure 1-241. Door 117 (KAC, 6/16/2015)

Architecture – Interior Finishes

Interior finishes are generally minimal utilitarian finishes. Some of the bays have newer finishes used to divide the spaces or provide additional storage space.

Maintenance Shop (100): Ceiling finish is painted gypsum board with a skylight located in the northwest corner. Walls have a painted gypsum board finish, except around the restroom which has a painted vertical wood paneling finish. There is a painted wood wainscot on the west wall and painted wood wall base on the north wall. Flooring is 12" x 12" vinyl composition tile (VCT).

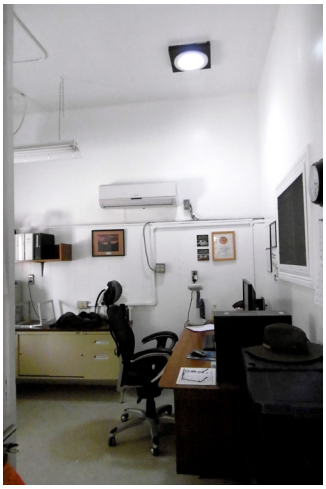


Figure 1-242. West wall, ceiling, and floor finishes (KAC, 6/16/2015)

Restroom (101): Ceiling and wall finishes are painted gypsum board. A grey wall board wainscot is installed on the north wall and the north end of the east wall. Wood cabinets are mounted on the east wall, along with a paper towel dispenser, soap dispenser, and first aid kit. Flooring is 12" x 12" VCT.



Figure 1-243. East wall and floor finishes (KAC, 6/16/2015)

Office (102): Ceiling and walls have a painted gypsum board finish. Flooring is 12" x 12"

VCT. In the northeast corner there is a closet with a gypsum board wall finish on the office side of the walls and exposed wood studs inside the closet.

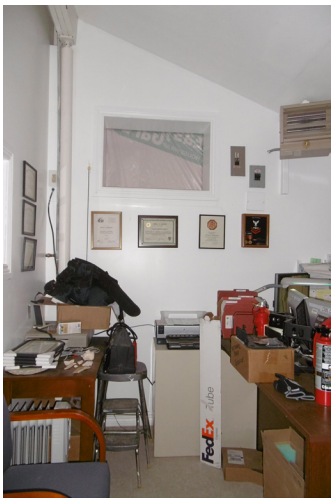


Figure 1-244. West wall, ceiling, and floor finishes (KAC, 6/16/2015)

Maintenance Shop (103): This space has been converted to function as an office and break room area, though the overhead door is still in place on the south wall. The ceiling finish is painted gypsum board with a wood trim. East, north, and west walls have a painted gypsum board finish with wood trim. Built in wood cabinets, painted white, with a plastic laminate countertop are located on the north and west walls. Flooring is 12" x 12" VCT.



Figure 1-245. North wall in the Maintenance Shop (KAC, 6/16/2015)

Office (104): Ceiling finish is painted gypsum board with wood trim at the joints. Wall finish on the east and south walls is painted plywood. The north wall is painted concrete and the west wall has a gypsum board finish. A painted wood base is installed at all walls. 12" x 12" VCT flooring has been installed throughout the room.



Figure 1-246. North and east walls in the Office (KAC, 6/16/2015)

Shop Area 1 (105): Ceiling finish is painted gypsum board with wood trim at the joints. The east wall has a gypsum board finish with pegboard mounted to it and the north wall is

a painted concrete wall. The west wall has a painted plywood finish with a window and door opening into the Maintenance Shop. The floor is concrete slab on grade.



Figure 1-247. East wall in Shop Area 1 (KAC, 6/16/2015)

Shop Area 2 (106): Ceiling finish is painted gypsum board with painted wood trim at the joints. Wall finishes are all different - the east has a painted stucco finish, the north is painted concrete, and the west is a painted gypsum board finish with pegboard mounted to it. The overhead door was removed from the south wall and replaced with a framed wall with a painted plywood finish. Shelves are mounted to the west end of the north wall while at the east end a brick ledge sits proud of the stucco at the top of the wall.



Figure 1-248. Looking south in Shop Area 2 (KAC, 6/16/2015)

A wood framed 5'-5" x 6'-10" opening on the east wall leads into Bay No. 1. A wood framed 5'-4" x 6'-9" opening in the west wall with hinges mounted to the frame but no doors leads to Shop Area 1. Flooring is concrete with an area in the northeast corner painted to indicate nothing can be placed there due to wall mounted electrical equipment at that location.

Bay No. 1 (107): Ceiling finish is painted plywood panels with 1x wood trim at the joints. The east wall finish is painted stucco over CMU and the west wall is painted CMU. A wood framed 5'-8" x 7'-9" opening in the east wall leads to Bay No. 2 and a wood framed 5'-5" x 6'-10" opening on the west wall leads to Shop Area 2.

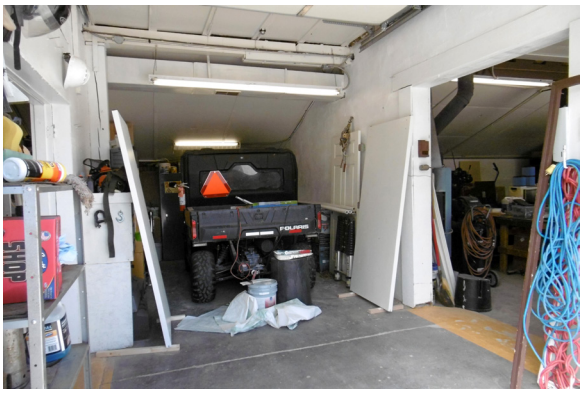


Figure 1-249. North and east walls in Bay No. 1 (KAC, 6/16/2015)

On the north wall, there is a stucco finish up to a brick ledge that sits proud of the stucco. A wood board finishes the wall from the top of the brick to the ceiling. A steel strap oriented vertically is attached to the north wall. Flooring is concrete.



Figure 1-250. Brick ledge on the north wall of Bay No. 1 (KAC, 6/16/2015)

Bay No. 2 (108) and Bay No. 3 (109): Bays 2 and 3 are open to each other, with only a center wood column separating them. Ceiling finish in both bays is painted gypsum board with insulation visible above it through a gap between the finish and roof structure. The east wall has a painted stucco finish while the north and west walls are painted CMU. A 5'-8" x 7'-9" opening in the west wall has a wood lintel and leads into Bay No. 1. Tool hangers are mounted on the north wall. Bay No. 2 is used as a shop and where the overhead door was on the south wall, is now a plywood finish over a framed wall. Flooring in both bays is concrete slab on grade. A concrete ramp, painted yellow, is located at the opening in the west wall since the floor level in Bay No. 1 is slightly higher than in Bays No. 2 and 3.



Figure 1-251. North wall in Bays No. 2 and 3 (KAC, 6/16/2015)



Figure 1-252. Infill south wall in Bay No. 2 (KAC, 6/16/2015)

Bay No. 4 (110), Bay No. 5 (111), Bay No. 6 (112) and Bay No. 7 (113): Bays No. 4 through 7 are all open to each other with only center columns and garage doors delineating the bays. Ceiling finish throughout the bays is the exposed roof structure. The finish on the

east wall of Bay No. 7 is vertical wood boards with a section of plywood at the south end of the wall, all painted. On the remaining walls of the bays, the finish is mud plaster over adobe brick set on top of a concrete wall. On the west wall, a wood lintel spans over an opening which has been infilled with CMU block. A wood platform with a wood guardrail between access openings has been installed in the back half of Bays No. 4 through 6 and the full length of Bay No. 7. Concrete flooring is painted with stripes to delineate parking spots and there are concrete tire stops at the north end of each space.



Figure 1-253. Bays No. 5-6 (KAC, 6/16/2015)

Bay No. 8 (114): Ceiling finish is painted plywood with 1x trim at the joints. The east wall is open to Bay 9, the north wall finish is painted plywood, and the west wall finish is painted gypsum board. An open painted wood platform with handrails creates a mezzanine level for additional storage in the space. Flooring is concrete slab on grade.



Figure 1-254. Bay No. 8 (KAC, 6/16/2015)

Maintenance Work Shop (115): Walls and ceiling have a painted plywood finish. The flooring is concrete.

Bay No. 9 (116): Ceiling has a painted plywood finish with 1x trim boards at the joints. Exterior walls on the south, north, and east side of the room have a mud plaster finish over adobe brick. Plywood is mounted to the north wall. The south half of the west wall is open to Bay No. 8, while the north half has a painted plywood finish. Flooring is concrete with stripes to delineate a parking space.



Figure 1-255. Bay No. 9 (KAC, 6/16/2015)

Architecture – Code/Life Safety Issues
The Maintenance Shop is a one-story, adobe brick, CMU, and wood frame building with a wood frame roof and mezzanine structure. The long rectangular building is used primarily for maintenance and vehicular storage. The south wall is punched regularly with garage bay doors. Several bays have been infilled with wood frame construction.

Occupancy
S
B

Construction Type
VB non sprinkled

Area

First Floor	4226
Mezzanine	98

The Maintenance Shop has retained its original use as a garage building with a few spaces converted to offices in the last addition. The existing building is 4,363 sf, one story structure. As a National Park Service building, any rehabilitation work to the Maintenance Shop is subject to the 2012 International Building Code (IBC) and its related family of codes.

Architecture – Accessibility
Access into the majority of the bays is via the overhead doors which meet accessibility width requirements, as do most of the interior doors. There are no thresholds at the exterior doors so there is no impediment to access, however none of the doors have accessible hardware. The restroom does not have accessible clearances or fixtures.

Existing Conditions -- Structural

Structural - General System Description
The Maintenance Shop is an approximately 4,300 square foot one-story structure constructed of a combination of adobe, CMU, and wood framed walls. All floors are concrete slab on grade and the storage mezzanines and asymmetrical gable roof are wood framed. There is an intermediate purlin running the length of the building at the height of the top of the south wall. The south elevation is made of a series of open garage bays framed by timber columns with overhead garage doors. The north wall has no openings and is built partially into a modest hill side. The Maintenance Shop is approximately 160' long in the east-west direction by 27' wide in the north-south direction. The building was constructed in multiple phases: the 1936 portion, the 1957 portion, the 1971 portion, and the 1981 portion. The original portion of the building (the easternmost 73' of the building) was constructed in 1936 and has adobe walls. It includes Bay No. 4 (110), Bay No. 5 (111), Bay No. 6 (112), Bay No. 7 (113), Bay No. 8 (114), the Maintenance Work Shop (115), and Bay No. 9 (116). The 1958 portion of the building (roughly 24' long) was constructed around 1957 and consists of CMU walls. It encompasses Bay No. 2 (108) and Bay No. 3 (109). The 1971 portion of the building (roughly 11') consists of Bay No. 1 (107). It utilized an existing CMU retaining wall and included construction of a new CMU wall. The 1981 portion of the Maintenance Shop (the westernmost 52') was constructed in 1981 of wood-framed and reinforced concrete retaining walls. This portion includes Maintenance Shop (100), Restroom (101), Office (102), Maintenance Shop (103), Office (104), Shop Area 1 (105), and Shop Area 2 (106). The following is based

on field observations, the 1957 site plan for the campus, and the 1981 drawings.

Structural - Foundation
Generally, the foundations of the Maintenance Shop consist of concrete stem walls beneath the walls and concrete pads supporting the columns. The 1981 portion of the building also has a continuous concrete footing below the north concrete retaining wall as well as square concrete piers below exterior columns along the south elevation and interior building columns.

The 1936 portion of the Maintenance Shop is founded on a concrete stem wall and supplemental concrete pedestals below columns. Around the perimeter of the building, an 18" thick stem wall extends 6" above the top of slab elevation. All of the columns are supported by concrete pads. Along the south elevation, the pads are 15" by 18" in plan and project 6 1/2" above the slab (See Figure 1-256).



Figure 1-256. Concrete pad supporting the columns along the south wall of the 1936 portion of the Maintenance Shop. Note the steel plate between the column base and the pad (CLB, 06/16/2015)

At the column line near the center of the building, the concrete pads are 12" by 12" in plan and project 4 1/2" above the slab (See Figure 1-257).



Figure 1-257. Concrete pad supporting the columns in the interior of the 1936 portion of the Maintenance Shop below the intermediate purlins (CLB, 06/16/2015)

1/4" thick steel plates are in place between the base of the columns and the concrete pads.

It is unknown exactly on what the 1957 and 1971 portions of the building are founded. Along the south elevation, two of the three columns are founded on square concrete pads in line with the wall and the third column lands directly on the slab (See Figure 1-258).



Figure 1-258. Columns along the south wall of the central portion of the Maintenance Shop. Note the column on the right of the image is founded on a concrete pad while that on the left of the image rests directly on the concrete slab (CLB, 06/16/2015)

Because of the presence of the Norman brick cap on the 1971 portion of the north wall, this wall is most likely the CMU site retaining wall detailed in the 1958 drawings and has a 1'-4" wide footing that is 8" thick and reinforced with two #4 reinforcing bars.

The 1981 portion of the Maintenance Shop is founded on reinforced concrete footings, slabs, and walls. The north and west walls are 10" thick concrete retaining walls reinforced with #4 bars spaced at 18" on center both ways. According to the 1981 drawings, below these retaining walls are 4'-0" wide and 10" thick footings reinforced with bars both top and bottom each way. Beneath each column along the south elevation of the building, 24" x 24" concrete pads support the bearing line parallel to the wall (See Figure 1-259).



Figure 1-259. Concrete pad supporting the columns along the south wall of the newest portion of the Maintenance Shop (CLB, 06/16/2015)

The pads are justified to the interior face of the columns and project 1 1/2" above ground. The 1981 drawings indicate that these square pedestals extend into the ground roughly 3'. Under the interior wood-framed walls, the slab is thickened and reinforced along the length of the wall.

Structural – Floor Framing

Throughout the entire Maintenance Shop, the first floors are concrete slabs on grade. The thickness of the slab is unknown in the 1936, 1958, and 1971 portions of the building, but the 1981 portion has a 4" thick slab reinforced with welded wire mesh on top of 4" of gravel for drainage. There is a step in the concrete slab of several inches between the 1958 and 1971 portions of the building where a small ramp has been added to allow wheeled access between the spaces (See Figure 1-260).



Figure 1-260. Ramp connecting the step in the concrete slab between the central and newest portions of the building (CLB, 06/16/2015)

The storage mezzanines found in the 1936 portion of the building are framed with 2x6 joists spaced at 16 inches on center. These floor systems are supported by beams with joist hangers, the exterior walls, and intermediate lumber posts (See Figure 1-261).



Figure 1-261. Mezzanine framing in the 1936 portion of the building (CLB, 06/16/2015)

All of the mezzanines are load posted with a rating of 25 pounds per square foot (psf) (See Figure 1-262).



Figure 1-262. Load post sign on the mezzanines in the 1936 portion of the building (CLB, 06/16/2015)

Structural – Roof & Ceiling Framing

The basic roof framing is consistent throughout the Maintenance Shop, with only minor differences between the different building vintages. 2x6 rafters spaced at 24" on center span in the north-south direction. To the south of the ridgeline, the rafters span from a beam at the top of the south wall of the building to the ridgeline (See Figure 1-263).



Figure 1-263. Roof framing in the 1936 portion of the Maintenance Shop. Note the collar ties and rafters supported by a beam above the garage door (CLB, 06/16/2015)

To the north of the ridgeline, the rafters span from a plate atop the north wall to the ridgeline and are supported mid-span by an intermediate dropped purlin, the height of which aligns with the height of the south wall. Also at the top of the south wall, a 2x6 collar tie is attached to each end of each rafter pair. Along both the north and south wall, 2x6 blocking is in place between the rafter ends.

In the interior of the 1936 portion of the building, the roof framing is exposed revealing that the rafters are surfaced with 1x6 horizontal board sheathing. 2x6 gussets tie rafter pairs across the peak of the building and 1x6 vertical boards extend from the roof peak down to the collar ties (See Figure 1-264).



Figure 1-264. Roof framing in the 1936 portion of the Maintenance Shop. Note the 2x6 gussets and 1x vertical struts between the ridge of the roof and the collar ties (CLB, 06/16/2015)

At the south wall of the building, the rafters are birdsmouthed and are supported on a 2x plate on top of the 11.5" deep beam atop the wall. The beams span between 12x12 columns spaced at 11'-0" and they are spliced over each column. The beams are connected to the columns with 3x3 x 1/4" angles with two bolts into each member (See Figure 1-265).



Figure 1-265. Connection of the spliced beam over the south wall of the building to the column below with bolted angles (CLB, 06/16/2015)

At the 7.75"x9.75" timber beams that act as the intermediate purlins towards the center of the building, the rafters are connected with door hinges (See Figure 1-266).



Figure 1-266. Connection of the rafters to the intermediate purlins with a door hinge in the 1936 portion of the building (CLB, 06/16/2015)

At the north wall, the rafters are birdsmouthed and nailed to the 2x plate atop the adobe wall.

Directly adjacent to the interior face of the north retaining wall, steel tie rods extend down from the rafters to the concrete slab on grade (See Figure 1-271).



Figure 1-267. Steel tie rod extending down from rafter where it is bolted into place to the concrete slab where it is cast in place (CLB, 06/16/2015)

On the interior of the 1936 portion of the building the intermediate timber purlins are spliced over 7.5"x7.5" timber columns spaced at 11'-0 on center (in line with those in the plane of the south wall) and connected on either side with a 3x3 by 1/4" thick angle with two bolts into each member and a 2"x9.5" splice plate (See Figure 1-267).



Figure 1-268. Connection of the spliced intermediate purlin in the 1936 portion of the building to the column below with bolted angles (CLB, 06/16/2015)

In the 1958 and 1971 sections of the building, there are three intermediate columns that support the beam above the south elevation of the structure. The 7.75"x9.75" intermediate timber purlin near the center of the building extends from the 1936 section and is connected with a 3x3 angle bolted to the two members (See Figure 1-268).



Figure 1-269. Splice connection of the intermediate purlin from the 1936 portion of the building (right side of image) to the intermediate purlin in the central portion with a bolted angle (CLB, 06/16/2015)

The purlin is supported by an 8x8 column located 10'-6" from the east adobe wall. Here the bottom of the rafters and ties are sheathed with one layer of gypsum board.

In the 1981 portion of the building both the beam atop the south wall and the intermediate purlins are triple 2x10 beams. The bottom of the rafters are sheathed with two layers of 5/8" gypsum wall board. The newer portion's rafters are sheathed with 3/8" plywood decking with a 24/0 span rating. The beams atop the south wall are supported by 11.5" x 11.5" wood columns that match the 1936 portion of the building. The intermediate triple 2x10 purlins are supported by 4" diameter steel pipe columns spaced at roughly 12'-6" on center (See Figure 1-269).



Figure 1-270. Triple 2x10 intermediate purlin in the newest portion of the building supported by a pipe column (CLB, 06/16/2015)

The 2x6 treated plate atop the north retaining wall which receives the rafters is connected to the wall with 1/2" diameter anchor bolts spaced at 4' on center.

Structural – Wall Framing

The exterior walls of the Maintenance Shop are constructed of several types of materials which vary depending on the vintage of the construction. The 1936 portion of the building has walls of adobe, the middle portions of the building have CMU walls, while the 1981 portion of the building has wood-framed and concrete walls. The south elevation, having open bays, is framed with a roof beam supported by timber columns.

The walls of the 1936 portion of the building are constructed of two wythes of adobe masonry bricks and the walls are roughly 18" thick. There is evidence that a return at the southwest corner of the 1936 portion of the building was removed and replaced with CMU when the 1958 portion was added. At this location, there is evidence that at least the corners of the adobe walls are reinforced with steel bars (See Figure 1-270). The walls are plastered with a mud coat.



Figure 1-271. Return in adobe masonry wall at intersection between the 1936 and 1957 sections. Note the steel reinforcing rod below the suspended adobe masonry units adjacent to the garage door (CLB, 06/16/2015)

A previous opening in the west adobe wall has since been infilled with CMU blocks (See Figure 1-272).



Figure 1-272. Opening in adobe masonry wall that has been infilled with CMU blocks (CLB, 06/16/2015)

In the 1958 portion of the Maintenance Shop, both the west partition wall and the north retaining wall are constructed of CMU. The blocks are stacked in a running bond pattern (See Figure 1-273).



Figure 1-273. Interior CMU wall with the 1957 section in the foreground and the 1960s & 70s section in the background (CLB, 06/16/2015)

It is unknown and undocumented whether these walls are reinforced or grouted.

The walls of the 1971 portion of the building are also constructed of CMU, but here the north retaining wall is plastered with stucco on both faces and the wall is topped with a Norman brick cap, similar to all of the site walls on the SCBL campus (See Figure 1-274).



Figure 1-274. Norman brick cap atop a previous site wall that is now a part of the north wall of the 1960s & 70s section of the Maintenance Shop (CLB, 06/16/2015)

A wood plate has been added to the top of the wall to be in plane with the wall plates of the building portions on either side. If this wall was a 1958 site retaining wall, it is most likely ungrouted and not reinforced vertically. The joints are reinforced horizontally every third course with number 9 wire. The interior partition wall is constructed of CMU blocks laid in a running bond pattern (See Figure 1-275).



Figure 1-275. CMU wall between the 1960s & 70s portion of the building and the 1981 portion (CLB, 06/16/2015)

The 1981 portion of the building is constructed of a combination of concrete retaining walls and wood-framed walls. See the foundation section for more information on the concrete retaining walls. Along the north wall of the building above the concrete retaining wall is a wood wall with 2x6 studs spaced at 24" on center. The exterior of the wall is sheathed with 5/8" thick pressure treated plywood while the interior face is sheathed with 1/2" thick gypsum wall board. The wood wall is anchored to the concrete wall through the 2x6 treated plate with 1/2" diameter anchor bolts at 4' on center. The interior partition walls are framed with 2x4 studs spaced at 24" on center with a single 2x4 top plate and a treated 2x4 bottom plate. 1/2" diameter anchor bolts spaced at 6' on center anchor the wood walls into the thickened concrete slab and both faces of the wall are sheathed with 5/8" thick gypsum wall board.

Structural – Lateral System
The lateral system of the Maintenance Shop consists of the roof diaphragm and the adobe, CMU, concrete, and wood-framed exterior and interior walls.

Structural – Load Requirements
The load requirements for the Maintenance Shop are based on the type of occupancy (live loads) and the geographical location of the building (climatic design criteria). The required floor live load capacity per the 2012 IEBC for garages is 40 pounds per square foot (psf). The Code required live load capacity of the wood-framed mezzanines used for storage is 125 psf, but they are load posted for only 25 psf. The minimum roof live load is 20 psf.

The ground snow load required for Scotts Bluff National Monument per Figure 1608.2 in the 2012 IEBC is 20 psf. This ground snow load translates to a flat roof snow load on the Maintenance Shop of 16 psf per ASCE 7-10, Minimum Design Loads for Buildings and Other Structures, with consideration to wind exposure, thermal condition, and a lower importance factor associated with maintenance buildings. The sloped roof snow load is the same as the flat roof snow load because of the rough surface of the shingled roof. The snow load can be adjusted based on the pitch of the roof to account for the decreased vertical projection of the load.

Existing Conditions -- Mechanical

Mechanical – Physical Description
The Maintenance Shop contains multiple natural gas fired unit heaters located in the maintenance bays to temper the building during winter.



Figure 1-276. Typical Gas Unit Heater (DMD, 6/16/15)

Natural gas unit heaters are located in Shop Area 1 (105), Shop Area 2 (106), Bay No. 1 (107), and Bay No. 3 (109). Bay No. 9 (108) and Office (102) contain electric unit heaters.

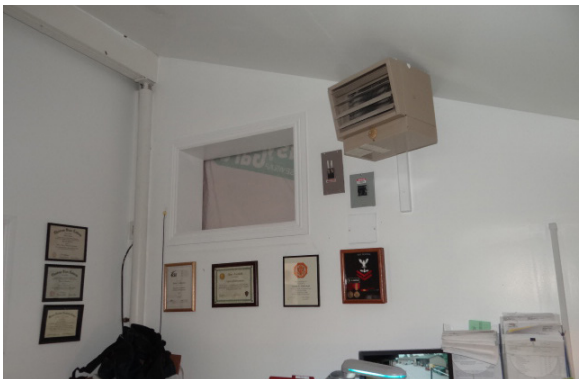


Figure 1-277. Electric Unit Heater in Office #102 (DMD, 6/16/15)

The office areas are heated via electric baseboard heaters.



Figure 1-278. Typical electric baseboard (DMD, 6/16/15)

The offices also contain air conditioning supplied by DX variably flow refrigerant split system with ductless wall mounted indoor evaporator sections.



Figure 1-279. Typical indoor evaporator section (DMD, 6/16/15)

There are wall mounted evaporator units located in the Maintenance Shop (100), Office (102), Maintenance Shop (103), and Office (104). The indoor units are supported by two (2) outdoor condensing units.



Figure 1-280. Outdoor condensing unit (DMD, 6/16/15)

One unit is located outside Office (104) and the other unit is located outside Office (102).

There is a "Wood Chuck" solid fuel ducted furnace system located in Bay No. 2 (108) that is non-functioning.



Figure 1-281. Solid Fuel Furnace (DMD, 6/16/15)

The furnace system is ducted to the adjacent bays and offices areas including Bay No. 1 (107), Shop Area 2 (106), Shop Area 1 (105), Maintenance Shop (103), and Office (102). The furnace system has a filter on the intake side where cold air is taken in before being heated. The furnace system is vented to the outside via a 10" round duct.



Figure 1-282. Filter and Flue venting from solid fuel furnace (DMD, 6/16/15)

Restroom (101) contains a small exhaust fan ducted directly to the outside.



Figure 1-283. Exhaust Fan in bathroom (DMD, 6/16/15)

Office (102) contains a ceiling fan.

Each indoor wall mounted air conditioning unit is controlled by a local thermostat. Unit heaters are also controlled by local thermostats.

Plumbing System Physical Description:
A ¾" cold water line enters into the building into Office (102) and the shut-off valve is located at the ceiling level in Office (102).



Figure 1-284. Water and refrigerant pipe entry in corner of Office (102)



Figure 1-285. Water shut-off in Office (102) (DMD, 6/16/15)

The water line is then routed to the Restroom (101) and Utility Sink located in Maintenance Shop (103). The water line materials are copper and stainless steel plumbing fixture flexible connection pipes.



Figure 1-286. Bathroom with water heater (DMD, 6/16/15)

The plumbing fixtures contained in the building consist of a flush tank water closet, wall mounted lavatory, and a utility sink.



Figure 1-287. Utility sink (DMD, 6/16/15)

Hot water is provided to the utility sink and restroom lavatory via a small tank on-demand water heater located on the wall in

the restroom. The water heater is an Ariston GL4S, 4-gallon capacity, and 1440 watts.



Figure 1-288. Water heater (DMD, 6/16/15)

The waste and vent lines are a combination of cast iron near the floor and PVC to the fixtures. A 2" VTR (Vent Through Roof) is to the right side of the water closet.

There is a 3/8" cold water line routed from the office area to the back wall of Shop Area 1 where an ice maker used to be located. The ice maker is no longer installed, but the water line has been left in place.

The natural gas line comes up from below ground outside at the east corner of Bay No. 9 and then is routed above ground on the side of the building to a gas regulator.



Figure 1-289. Gas line (DMD, 6/16/15)

The gas regulator is located outside Bay No. 2 on the building wall.



Figure 1-290. Gas regulator (DMD, 6/16/15)

The gas line then splits into two main runs with one line immediately entering the building to serve the gas unit heater located in Bay No. 2 (108) and the second line continues on the outside of the building and enters at Shop Area No. 2 (106) and then provides gas to the unit heaters in Shop Area No. 2 (106), and Shop Area No. 1 (105).

Fire Protection System - Physical Description

There is no wet fire protection system within the building.

Existing Conditions -- Electrical

Electrical – Infrastructure

Electrical service was originally added to the site prior to the 1940s with additions to the electrical distribution across the site as recently as the early 2000s. Roosevelt Public Power District (RPPD) is presently the electrical utility provider, with the incoming underground primary electrical services routed to the west of the residence, and along the north side of the Maintenance Shop. The pad mounted 45KVA, 208/120V, 3 Phase RPPD transformer is located at the Maintenance Shop, at the exterior of the northeast bay, along the north wall approximately 4 feet from the corner, also referenced in the 2016 Cultural Landscape Report.



Figure 1-291. Existing transformer located adjacent to the corner of the Maintenance Shop (JB, 6/16/2015)

This utility transformer serves a kilowatt hour utility meter (#55-448-768) and an ITE Imperial Corporation, 42 circuit, 400 amp 3 pole Main Breaker, Three Phase, NEMA 1 panelboard mounted in the Maintenance Shop northeast bay along the interior north wall.



Figure 1-292. Existing utility meter (JB, 6/16/2015)

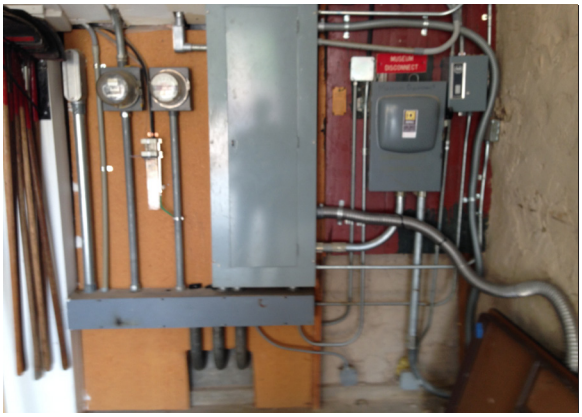


Figure 1-293. Existing main electrical gear located on north wall of Bay No. 9 (JB, 6/16/2015)

The main electrical distribution panel provides not only service to the Maintenance Shop, but also service to the surrounding buildings on the site.

This panel includes a 100 amp 2 pole breaker serving the 1958 (Ranger) Residence, a 100 amp 2 pole breaker serving the 1938 Residence (Administration Building), a 60 amp 2 pole breaker serving the welding panel in the Maintenance Shop, a 100 amp 2 pole breaker serving the recent Restroom Building addition, a 50 amp 2 pole breaker for the fire alarm flammable container, and a 50 amp 2

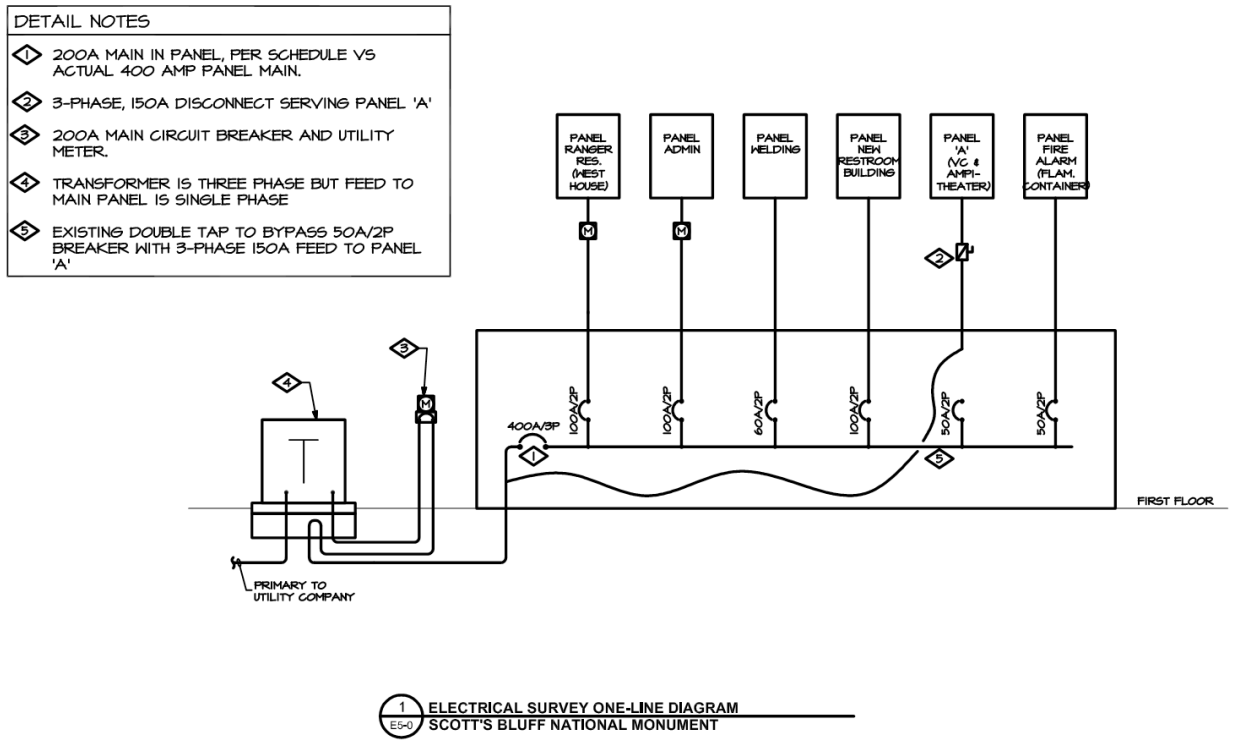


Figure 1-294. Existing One Line Diagram (AEDG, 10/24/2015)

pole breaker originally serving the Visitor Center that is no longer used and is bypassed by a double tap ahead of the 400 amp main breaker in the distribution panel to service the Visitor Center. These breakers and double tap serve underground feeders to each of the respective buildings. The one-line diagram illustrates the service to the surrounding buildings as described above.

The main distribution panel includes a connection to an exposed ground wire to an existing ground rod connection as the only means for a service grounding electrode.

Electrical – Branch Circuits

The existing branch circuit wiring within the Maintenance Shop was observed to be primarily routed tight to the ceiling through EMT conduit. Junction boxes are present throughout for routing to devices and lighting.

Electrical – General Power Outlets and Equipment

The existing general power devices and equipment were observed throughout the Maintenance Shop, with general convenience receptacles as well as special equipment considerations.

The west side of the building includes an enclosed office and breakroom spaces, including power for IT equipment, electric space heating and air conditioning, as well as convenience outlets on each wall. Power is provided for a hot water heater as well as a refrigerator for the break space.

Each garage bay has power for electric heaters, electric garage door openers which are in the process of being installed, and general receptacles for maintenance equipment.

Devices are surface mounted throughout.

Special devices include two 50A receptacles for connections to a welder, located within two of the central bays, as well as dedicated connection for a woodchuck and other woodshop equipment.

Junction boxes housing conductors were observed in several bays without cover plates.

Electrical – Lighting Systems
Typical existing lighting systems observed within the Maintenance Shop were chain-hung, bare-lamp 4 foot and 8 foot T8 fluorescent pendant strip lights, two strip lights per bay.

A single solotube type skylight fixture was observed within the main break area on the west most bay of the building.

Exterior area lights are mounted outside of the building, between garage doors, which appear to utilize photocells for on off control.

Lighting control within the building was observed to be standard on/off switches located in each bay of the Maintenance Shop. Office and breakroom areas both utilize occupancy sensor control.

Exit and emergency lighting was not observed in any of the spaces within the maintenance bays.

Electrical – Telecommunications
Two existing IT racks were observed within the closet located in the corner of Office (102). Fiber was observed entering the panel from underground service from the Visitor Center basement main server room.

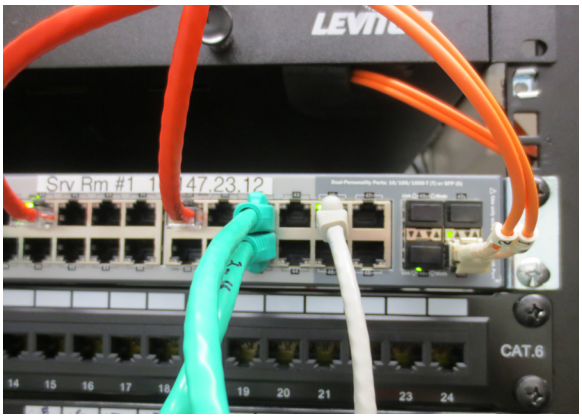


Figure 1-295. Existing server rack in Office (102) storage room (JB, 6/16/2015)

Low voltage cabling was routed throughout the maintenance bays, exposed in wrapped bundles, tight to the ceiling.

Electrical – Fire Alarm and Security System
The existing fire alarm system within the Maintenance Shop utilizes hard-wired tube-style smoke, rate of rise devices, and buzzer and bell notification which are dated and appear to have reached their end-of-life. Notification and detection coverage appeared light among each of the bays. The existing head-end equipment is located within the central bay, an existing notifier panel with a "completed installation" date of August 18, 1973. The overall system has reached its end of life and it is unclear whether the system is still operational.



Figure 1-296. Existing Fire Alarm Control Panel for Maintenance Shop (JB, 6/16/2015)

The only security observed within the Maintenance Shop was the motion detection occupancy sensors tied into the solar/battery back-up area lighting.

Electrical – Lightning Protection
No lightning protection is installed on the building, and there is no surge protection on the electrical system.

Existing Conditions - Hazardous Materials

Hazardous Materials - General Description
See the full Hazardous Materials Evaluation by Landmark Environmental in the Appendix.

Asbestos Assessment
The Maintenance Shop was visually reviewed and samples were taken at locations of potential asbestos containing building materials. Bulk materials samples were collected of a composite core which included all layers within the suspected asbestos containing material (ACM). Samples were then sent to Reservoirs Environmental, Inc. for testing.

Lead Containing Paint
The lead containing paint inspection included a visual inspection and sampling of the structure. Paint chip samples were submitted to Reservoirs Environmental, Inc. for testing using the Atomic Absorption / Inductively Coupled Plasma protocol to determine lead content.

Additionally, soil grab samples were collected to determine if lead was present at concentrations above applicable regulatory screening in soils at the drip line of the building.

Moisture and Microbial Evaluation
Landmark performed a visual assessment for microbial growth and conducted a moisture survey of suspect porous building materials utilizing a moisture meter.

Biological
A visual survey was performed for any indications of potential biological hazards. The inspector also interviewed staff regarding their knowledge of any existing conditions.

General Condition Assessment

Depending on the element, the Maintenance Shop is in good to poor condition - requiring repairs or replacement of some exterior features and repairs of a few interior elements. Mechanical and structural systems require some repairs to select elements. Electrical systems require work to address deficiencies and potential life safety issues.

Condition Assessment -- Architecture

Architecture – Roofing System
Condition: Fair
In general, the roofing system is in fair condition with elements requiring replacement or repair.

Architecture – Roofing
Condition: Fair
Wood shingles are in fair condition with moss growing in places and some of the shingles are split.

Architecture – Flashing
Condition: Good
Flashing is in good condition.

Architecture – Fascia
Condition: Good
Fascia is in good condition.

Architecture – Soffit
Condition: Good
Soffit is in good condition.

Architecture – Exterior Facade
Condition: Fair
Generally the exterior facade is in fair condition with deterioration to some finishes.

Architecture – Exterior Walls
Condition: Fair to Poor
Stucco deterioration is occurring at grade on the east, north, and west elevations.

Additionally, the stucco is cracked below the beam ends where they extend past the wall finish on the east elevation. Paint is peeling off the stucco in a few places, generally close to grade.



Figure 1-297. Cracks in the stucco (KAC, 6/16/2015)

Insulation on the north elevation is in poor condition with multiple holes in it and sections completely missing.



Figure 1-298. Deteriorated insulation on the north elevation (KAC, 6/16/2015)

Architecture – Windows
Condition: Good
In general, the windows are in good condition with deterioration of elements at a few.

Window 101: Good condition.

Window 102, 103 and 104: Good condition.

Window 105 and 106: Windows are in good condition with a few chips in the paint on the exterior side.

Window 107: Window is in fair condition with deterioration at the wood sill. There are a few cracks in the wood and paint.



Figure 1-299. Cracks on the sill of Window 107 (KAC, 6/16/2015)

Window 108: Good condition.

Window 109: Good condition.

Window 110: Good condition.

Architecture – Doors
Condition: Good
Doors are all relatively modern and in good condition.

Door 101: Good condition.

Door 102, 103, 105, 107, 108, 109, 110, 111, 112 and 113: Good condition.

Door 104: Good condition.

Door 106: Good condition.

Door 114: Good condition.

Door 115: Good condition.

Door 116: Good condition.

Door 117: Good condition.

Architecture – Interior Finishes
Condition: Poor to Good
Finishes range from good condition to extremely poor condition where the structure underneath is failing.

Maintenance Shop (100): Ceiling, wall, and floor finishes are in good condition.

Restroom (101): Ceiling, wall, and floor finishes are in good condition.

Office (102): Ceiling, wall, and floor finishes are in good condition.

Maintenance Shop (103): Ceiling, wall, and floor finishes are in good condition.

Office (104): Ceiling, wall, and floor finishes are in good condition.

Shop Area 1 (105): Ceiling and wall finishes are in good condition. There are a few minor cracks in the concrete, but the floor is generally in good condition.

Shop Area 2 (106): Ceiling finish is in good condition with a small area that has been patched with plywood. Wall finishes are in good condition, with the exception of the east wall which has a crack just north of the opening. Flooring is in good condition.

Bay No. 1 (107): Ceiling and wall finishes are in good condition. The flooring is in good condition, though there are a few cracks.

Bay No. 2 (108) and Bay No. 3 (109): Ceiling finish is in good condition. The east wall finish is in poor condition with a crack at approximately 4'-6" above the floor and noticeable bowing. Finishes on the remaining walls are in good condition. Flooring is in good condition with a few cracks.



Figure 1-300. Bowing in the east wall of Bay No. 3 (KAC, 6/16/2015)

Bay No. 4 (110), Bay No. 5 (111), Bay No. 6 (112) and Bay No. 7 (113): Ceiling is in good condition. Finishes on the east wall are in good condition. Stucco finish on the north, south, and west walls is in fair to poor condition. The majority of the adobe blocks and stucco finish are missing at the southwest corner revealing CMU block on the exterior side. There is some deterioration of the stucco finish on the north wall. The wood mezzanine platform appears to be in good condition. Flooring is in good condition, with a some cracks.



Figure 1-301. Deteriorated plaster finish on the north wall (KAC, 6/16/2015)

Bay No. 8 (114): Finishes are in good condition.

Maintenance Work Shop (115): Finishes are in good condition.

Bay No. 9 (116): Ceiling finishes are in good condition. Mud plaster and adobe bricks on the south and east walls are in poor condition with the plaster finish fallen off in places, revealing the adobe bricks. Areas of plywood wall finish are in good condition. Concrete floor is in good condition with a few cracks.



Figure 1-302. Deteriorated plaster finish on the south and east walls (KAC, 6/16/2015)

Architecture – Code/Life Safety Issues
Condition: Good to Poor
The Maintenance Shop generally meets code requirements of the IEBC. There is no code requirement for a fire suppression system in this building but NPS Director's Order 58 section 9.1.8 requires consideration for fire suppression of structural fires "to prevent loss of human life and minimize damage to historic property resources." However, it acknowledges that when these requirements would require work that would damage the historic character and integrity of the building then other changes will be made in lieu of altering the building. If the park decides a fire suppression system is required, due to the utilitarian nature of the building an exposed pipe system could likely be installed throughout without having a negative effect on the character of the building.

Architecture – Accessibility
Condition: Poor
While clearances are adequate at the entrances to the space, there is no accessible hardware.

Condition Assessment -- Structural

Applicable Codes:
The code references used for this assessment include the 2012 IEBC and ASCE 7-10 Minimum Design Loads for Buildings and Other Structures.

Structural – Foundation
Condition: Good
Throughout the Maintenance Shop, the foundations are in good condition. There are no signs of heave or settlement indicating that the foundations are functioning properly. In several locations, some of the concrete pads have minor impact damage sustained most likely from vehicles. These are not of structural concern.

Structural – Floor Framing
Condition: Good
Throughout the Maintenance Shop, the floor is in good condition. There are no indications of differential settlement or other forms of displacement. There are minor cracks associated with typical thermal expansion and contraction, shrinkage in the concrete slabs, and frequent maintenance use. The mezzanine framing is also in good condition and will remain so if the load posted 25 psf continues to be acknowledged since that is the live load capacity of the floor joist system.

Structural – Roof and Ceiling Framing
Condition: Fair
The Maintenance Shop's roof framing system is in fair condition. While there is only one minor issue concerning the framing or the load carrying capacity, there are a few localized areas of decay in other members such as the intermediate purlins and columns.

The only minor issue with the framing is the connection between the intermediate purlin in the original portion of the building and that of the 1957 portion. The bolted angle connection at the splice is still allowing the member to deflect at this point (See Figure 1-290).



Figure 1-303. Deflection of the intermediate purlin at the splice connection in the 1958 portion of the Maintenance Shop (CLB, 06/16/2015)

At the west end of the building, several of the members are affected by rot. Here the end of the rake edge rafter (See Figure 1-291), the end of the intermediate purlin (See Figure 1-292), and the wall plate atop the west end of the north wall (See Figure 1-293) are in varying states of decay. Other possible deterioration issues with this west wall may have already been ameliorated with the work that was underway during the observation visit.



Figure 1-304. Deterioration in the rake edge rafter along the west elevation of the Maintenance Shop (CLB, 06/16/2015)



Figure 1-305. Deterioration in the triple 2x10 intermediate purlin along the west elevation of the Maintenance Shop (CLB, 06/16/2015)



Figure 1-306. Deterioration in the north wall plate at the northwest corner of the Maintenance Shop (CLB, 06/16/2015)

The other location where decay is an issue is at the base of the columns of the 1981 and 1971 portions of the building. This decay is a result of water traveling atop the concrete foundations into the end grain of the columns. This is not an issue in the 1936 portion of the building where a 1/4" steel

plate separates the end of the column from the concrete foundation. Although the wood is only punky and no significant section loss has occurred yet, if not addressed soon the decay could spread. The column bases in the 1936 portion are not affected by decay at this time, but there is one column base that has been repaired with a dutchman (See Figure 1-294).



Figure 1-307. Previous dutchman repair in the base of a column in the 1936 section of the Maintenance Shop (CLB, 06/16/2015)

Some of the columns in the 1936 portion of the building have twisted over the last 80 years, but this movement is common in timbers when they dry. The behavior has a negligible effect on the load carrying capacity of the columns (See Figure 1-295).



Figure 1-308. Base of column that has twisted in the 1936 section of the Maintenance Shop (CLB, 06/16/2015)

Similarly, the shrinkage checks visible in several of the large timber columns are not of structural concern.

Structural – Wall Framing
<u>Condition</u>: Poor: Southwest Adobe Wall Return & Westernmost Interior CMU wall; Good: Everywhere Else

Most of the walls are in good condition with only two exceptions: the southwest return in the adobe wall and the interior CMU wall between the 1971 portion of the building and the 1981 addition.

The return in the adobe wall was most likely removed during the construction of the 1958 addition. The removal was performed crudely. With the removal of this section of wall, the west adobe wall is now not adequately tied to the south wall of the building and therefore not properly braced at that location (See Figure 1-296). On the west side of the adobe wall separating Bay 3 and Bay 4 near the location where the wall return was removed, a noticeable bulge has developed about 2' off of the floor (See Figure 1-297). The likely cause of this displacement is lack of

connectivity between the adobe wythes that developed when the return was removed. Now the western wythe is allowed to displace outward.



Figure 1-309. Return in adobe masonry wall at intersection between the 1936 and 1957 sections. Note the suspended adobe masonry units adjacent to the garage door and the lack of connection between the west wall and the CMU south wall (CLB, 06/16/2015)



Figure 1-310. Bulge visible on the west side of the adobe wall separating Bay 3 and Bay 4. This displacement is caused by the lack of connectivity of the adobe brick wythes that developed when the wall return on the east side of the wall was removed (CLB, 06/16/2015)

If this condition is not addressed, the unsupported end of the wall could possibly destabilize during a seismic event. In this same location the unsupported adobe units that remain on the south wall are concerning. These units could become dislodged and create a hazard for building occupants.

As for the CMU wall between the 1971 bay and the 1981 addition, there are visible gaps in the mortar joints in the head (See Figure 1-298).



Figure 1-311. Separation in the joints of the CMU wall between the 1971 portion of the building and the 1981 addition (CLB, 06/16/2015)

This movement indicates that the header over the opening in the wall has shrunk or deflected over time allowing the units directly above to shift. If the wood header continues to creep in the future, the CMU units will continue to move.

In the adobe walls, there are two small issues. Near the bottom of the walls, there are several burrow holes created by vermin that extend about half the thickness of the wall. At the north end of the west adobe wall of the original building, there are several adobe bricks missing towards the top of the wall. These missing units create discontinuity in

the walls and compromise the lateral load path.

In terms of retaining soil on the north side, the adobe, CMU, and concrete walls all appear to be performing satisfactorily. There are no signs of tilt or bulging. Evidence of water infiltration is minor.

Structural – Lateral System
Condition: Fair
The lateral stability of the Maintenance Shop is fair. The lateral system appears to be performing satisfactorily, there are no changes in use proposed that would trigger that the system be compliant with current day building codes, and the specified lateral loads for the geographical areas are relatively low.

On the other hand, the three-sided configuration of the building (with most of the south wall consisting of garage doors), lends itself to collect relatively high lateral loads in the north-south cross walls. As long as there are adequate connections between the roof diaphragm and the cross walls as well as the cross walls to the exterior walls of the Maintenance Shop, the lateral force resisting system is adequate.

Structural – Load Requirements
Condition: Good
The roof framing members of the Maintenance Shop are of adequate size to carry the design loads required by the Code. The mezzanine has a 25 psf live load capacity as is posted.

Several wood species were identified in the Maintenance Shop. One sample was collected from a rafter in the 1936 section of the building. The microscopic analysis revealed that the rafters are most likely Southern or Western Yellow Pine. Since the microscopic characteristics cannot reliably be separated between the species, the actual species could possibly be Loblolly pine, Shortleaf pine, Longleaf pine, Slash pine, Pitch pine, Ponderosa pine, or Lodgepole pine. The Western Woods species group was chosen for analysis purposes since it provides the most conservative values of the possible species. Due to the large number of knots present in the rafters, grade No. 2 is assumed. For the mezzanines, Hem-Fir species and grade No. 2 was used for analysis purposes. This decision is based on the grade stamps found on the members (See Figure 1-299).
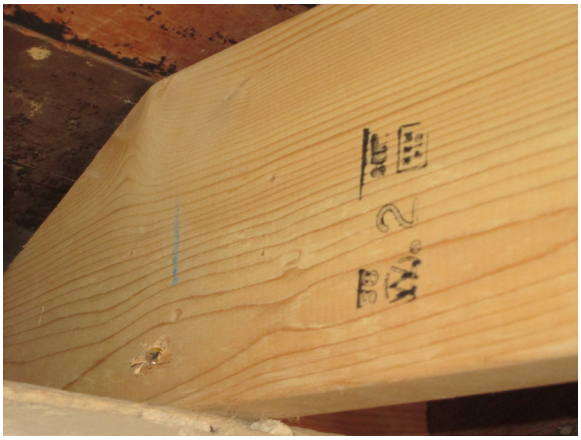


Figure 1-312. Grade stamp on the framing of the mezzanine of the Maintenance Shop (CLB, 06/16/2015)

Condition Assessment -- Mechanical

Mechanical - Condition Assessment
Condition: Good to Poor
The existing gas and electric unit heaters are in fair condition and in need of replacement. The unit heaters appear to be near the end of their useful life.

The "Wood Chuck" solid fuel furnace is in poor condition and should not be operated in the current condition. The flue venting

from the furnace to the outside has rusted and openings are visible within the occupied space and this is not an acceptable condition.

The electric baseboard heaters and split system air conditioning system are in excellent condition and less than 5 years old.

Plumbing - Condition Assessment
Condition: Good to Fair
The water line is in fair condition.

The electric water heater is in good condition.

The plumbing fixtures are in fair condition.

There is no backflow preventor on the entry line which is required by the International Plumbing Code.

Fire Protection - Condition Assessment:
Condition: N/A

Condition Assessment -- Electrical

Electrical – Infrastructure
Condition: Poor
The existing main distribution panel does not take advantage of the available 120/208V, 3 phase power that is available at the site. The existing equipment located in garage bay where it has potential to be affected by the elements, is NEMA 1 Rated, and weathering is apparent on the gear. Several existing code violations exist including double tabs within and downstream of the gear.

Electrical – Branch Circuits
Condition: Fair
General branch circuit wiring is adequate for current maintenance uses and is housed in surface mounted rigid, EMT conduit.

Electrical – General Power Outlets and Equipment
Condition: Fair
General power devices and equipment appear to be in operating condition and are located frequently throughout each bay of the Maintenance Shop. It may be considered that some of the locations may be exposed to the elements and should be weatherproof/GFI protected.

Electrical – Lighting Systems
Condition: Poor
The existing strip fixtures provide adequate lighting for maintenance purposes.

On/Off switches are utilized, with no automatic control present, however there is cause for safety concerns if automatic controls were to be used while work is ongoing in these areas.

Emergency lighting fixtures and exit signs are not present. Safety concerns in a loss of power while work is ongoing merit that emergency lighting should be utilized in these areas.

Electrical – Telecommunications
Condition: Poor
The existing service to the Maintenance Shop is adequate for existing phone and computer connections being utilized for employee use, however the low voltage cabling observed routing through the maintenance bays is not routed through conduit, wrapped in bundles, and can be exposed to the elements for extended periods of time. At this time, the current installation is at risk of damage, nor is it installed to NPS standards which require it to be installed in conduit.

Electrical – Fire Alarm and Security System
Condition: Poor
The existing fire alarm system has reached its end of life, notification and detection devices are lacking in coverage per the National Fire Protection Association (NFPA) 72-Section 7.5 and 11.5, and it was unclear whether the existing system in the maintenance facility is still operational.

Electrical – Lightning Protection
Condition: Poor
There is no existing lightning protection system at the Maintenance Shop.

Condition Assessment - Hazardous Materials

Hazardous Materials - General Description
Condition: Fair
See the full Hazardous Materials Evaluation by Landmark Environmental in the Appendix.

Asbestos Assessment
ACM is defined as a material containing greater than one percent asbestos by weight, volume or surface area. Regulations distinguish treatment requirements between friable and non-friable forms of ACM. Test results of samples taken in the building identified no ACM materials. However, roofing materials were not sampled as part of this survey and are assumed to be ACM.

Lead Containing Paint
Lead Based Paint (LBP) is defined as a paint containing 0.5% lead by weight or 1.0 milligram per cubit centimeter by both the EPA and HUD. No samples were determined to contain greater then 0.5% lead concentrations.

The EPA, established screening levels/ cleanup criteria for lead in soils based on direct contact in residential scenarios is 400 mg/kg and none of the samples were above this.

Moisture and Microbial Evaluation
Landmark did not observe visual indications of water intrusion and/or damage within the structure.

Biological
No indications of accumulated rodent or bird feces were observed and on-site personnel were not aware of any significant signs of pest intrusion.

Character Defining Features for the Maintenance Shop

Mass/Form. The overall shape of the building with its linear form and saltbox roof is a character defining feature.

Exterior Materials. The stucco finish on the original walls and the walls of the earlier additions is a contributing feature, as is the wood shingle roofing. Additionally, the exposed wood beams and rafter tails contribute to the character of the building. Paint colors - the Light Peach on the stucco and the original Red Earth on the columns - contribute the character of the building.

Openings. The rhythm of the garage bay doors is a contributing feature to the character of the building, as is the original window on the east elevation.

Interior Materials. The original plaster finish on the masonry at the original and first addition exterior walls (not interior due to construction of additions to the west) contributes to the historic character of the building.

Part 2: Treatment and Use

Treatment and Use

The recommended treatment for the Maintenance Shop is rehabilitation. This allows for altering a building to adapt to changing or continuing uses while preserving the historic character. Building use has not changed since its original construction and will continue as such in the current manner for the foreseeable future.

Three additions have been constructed, all of which extended the building to the west. All of the additions were constructed in keeping with the original style and character of the building. However, the interior configuration of some rooms has changed and finishes have been replaced in some rooms. The general recommendation approach in this report is to repair damaged materials and finishes and leave undamaged surfaces in their current state whether they are historic or modern. For cultural landscape recommendations, refer to the CLR produced in conjunction with this HSR.

Recommended Treatments by Feature / Element

Treatment -- Architecture

Architecture - Roofing
Priority: **Serious**
Replace wood shingles in-kind. New shingles should be dipped in the dark reddish stain, used on roofs throughout out the complex, prior to installation to ensure even coating on all faces. New roofing should be installed to match historic detailing, including the double thickness every fifth row of shingles.

Architecture - Flashing
Priority: **Minor**
No work recommended at this time.

Architecture - Fascia
Priority: **Minor**
No work needed at this time.

Architecture - Soffit
Priority: **Minor**
No work needed at this time.

Architecture - Exterior Walls
Priority: **Serious**
Remove deteriorated stucco at grade and replace in-kind. Where paint is peeling, loose paint should be removed and the area repainted. Exposed insulation at the east end of the north elevation should be removed and new insulation installed with an appropriate protective finish on the exterior side.

Architecture - Windows
Priority: **Minor or Serious**
Window 101: No work recommended at this time.

Window 102, 103 and 104: No work is required at this time.

Window 105 and 106: Remove any loose paint and repaint the window and trim on the exterior side.

Window 107: Evaluate the condition of the wood sill at the time work is to be done. If possible, fill cracks and repaint the sill. If deterioration has progressed, replace the sill in kind.

Window 108: No work is required at this time.

Window 109: No work is required at this time.

Window 110: No work is required at this time.

Architecture - Doors
Priority: **Minor**
Door 101: No work recommended at this time.

Door 102, 103, 105, 107, 108, 109, 110, 111, 112 and 113: No work recommended at this time.

Door 104: No work recommended at this time.

Door 106: No work recommended at this time.

Door 114: No work recommended at this time.

Door 115: No work recommended at this time.

Door 116: No work recommended at this time.

Door 117: No work recommended at this time.

Architecture - Interior Finishes
Priority: **Text**
Maintenance Shop (100): No work recommended at this time.

Restroom (101): No work recommended at this time.

Office (102): No work recommended at this time.

Maintenance Shop (103): No work recommended at this time.

Office (104): No work recommended at this time.

Shop Area 1 (105): No work recommended at this time.

Shop Area 2 (106): Monitor the crack in the east wall for movement. If it is stable, fill the crack and paint the area.

Bay No. 1 (107): No work recommended at this time.

Bay No. 2 (108) and Bay No. 3 (109): See structural recommendations for the east wall. Once repair work is completed, apply a stucco finish that matches the original in composition and texture. Paint the walls.

Bay No. 4 (110), Bay No. 5 (111), Bay No. 6 (112) and Bay No. 7 (113): See structural recommendations for the north, south and west walls. Once structural work is completed, apply new stucco wall finish that matches the original in composition and texture. Paint the walls.

Bay No. 8 (114): No work recommended at this time.

Maintenance Work Shop (115): No work recommended at this time.

Bay No. 9 (116): Remove areas of loose plaster finish. Install new plaster finish that matches the historic in composition and texture and paint the wall.

Architecture - Code/Life Safety Issues
Priority: **Serious**
A fire sprinkler system is necessary per NPS Director's Order 58. The design should ensure it is installed in a way that is not detrimental to the historic fabric.

The IEBC, International Existing Building Code, applies to the repair, alteration, change of occupancy, addition to and relocation of existing buildings. Within this code, work is categorized into Alteration Levels 1, 2 and 3 depending on the amount of work within the building. Additional categories include Change of Occupancy, Additions, Historic Buildings and Relocated Buildings.

Requirements of the code are limited to work areas of the project Levels 1-3. This means that Alteration projects are not required to upgrade the entire building per current code, just elements that are within the project work area dependent on the nature of the alteration work. Change of Use projects trigger more thorough upgrades and the building must be brought up to current code requirements for the new use.

Architecture - Accessibility
Priority: **Serious**
Accessible access for visitors and staff must be provided. Provisions need to be made for accessible staff offices and spaces. Unique functions, such as break rooms, need to be on accessible routes so no staff member is precluded from using common spaces. Hardware on the main entry door should be replaced with lever hardware to provide accessible access to a work area. An accessible restroom would also need to be provided for the building.

Treatment -- Structural

Structural - Foundation
Priority: **Minor**
No work is recommended at this time.

Structural - Floor Framing
Priority: **Minor**
The load posting signs in the 1936 portion of the building should remain in place. Other than this, no work is recommended at this time.

Structural - Roof Framing
Priority: **Serious**
There are several suggestions to strengthen the roof framing of the Maintenance Shed.

At the connection between the purlins of the 1936 and 1957 portions of the building, the current connection is not adequate to transfer the load as is evidenced by the deflection of the member at this location. It is recommended to improve this connection by sharing the purlins, removing the existing steel angle, and providing a new, longer and deeper piece of steel (channel or angle) with additional bolts.

On the west end of the building, there are several members affected by decay. It is recommended to remove all portions of the wood members exhibiting rot including some additional sound material to ensure that all decay inducing microbes are removed. The members should be replaced in kind. At some locations, at the purlin for instance, the intersections between the new material and the existing material will require additional connections elements so that internal stresses can be carried through the splices.

Where the bases of the columns have begun to display signs of decay, the affected material should be removed and replaced with a wood Dutchman of the same species of wood as the columns. To help stop water from migrating from the concrete foundations into the wood columns, install steel plates between the base of the columns and the concrete foundations. It may also be prudent to install borate rods near the base of the columns which will help chemically deter decay.

Structural - Wall Framing
Priority: **Serious**
Because the return in the adobe wall was removed at some point, the walls at this junction have become unstable. It is recommended to tie the adobe cross-wall to the perpendicular CMU wall with full height steel angles on either side of the junction of

the two walls that are bolted into the masonry wall. At the adobe wall, steel straps should be welded onto the steel angle leg towards the top of the wall and run back along the wall. This will help tie the two walls together and provide a path for the lateral loads to travel through the building and its foundations and into the earth. It is of utmost importance to be sure that the rafter pair just adjacent to the adobe wall is adequately connected to the wall with clips and/or anchors.

At the bulge in the adobe wall between the 1936 and 1958 portions of the building, it is suggested to shore the wall temporarily and rebuild the bulging section with adobe bricks made of materials comparable and compatible with the existing adobe bricks.

At the interior CMU wall between the 1971 and 1981 portions of the building, rake out and repoint the open joints in the masonry and monitor over time. If the joints reopen, the header over the opening in the wall has continued to creep and will need to be replaced with seasoned wood or steel or be strengthened with steel cover plates.

Where critters have burrowed into adobe units at the base of the wall, infill the holes with an appropriate adobe mud mix made to match the properties of the original adobe units. If the holes are large and the adobe brick has been compromised, it is recommended to remove and replace the affected unit with an adobe brick made to match the composition and material properties of the existing adobe units.

All missing units should be replaced with new adobe bricks made to match the properties of the surrounding adobe units.

Structural - Lateral System
Priority: **Serious**
Although most of the elements needed to resist the lateral loads required by Code are in place, some of the connections between the elements are questionable. Clips, straps, and blocking should be strategically installed to improve structural members' interconnectivity. The roof framing elements need to be connected to the top plates of the walls where none exist and connected to the intermediate cross walls. It would also be prudent to verify or provide proper connectivity between the interior cross walls and the exterior walls where they intersect either with exterior applied plating/ anchoring or internal reinforcing.

Structural - Load Requirements
Priority: **Minor**
No work is recommended at this time.

Treatment -- Mechanical

Mechanical - Treatment Recommendations
Priority: **Critical**
Replace existing natural gas unit heaters located in Shop Area 1 (105), Shop Area 2 (106), Bay No. 1 (107), and Bay No. 3 (109).

Replace existing electric unit heaters located in Bay No. 9 (108) and Office (102).

Replace venting to "Wood Chuck" and have proper operation of the heating device verified by a qualified technician.

Plumbing - Treatment Recommendations
Priority: **Critical**
There is no reduced pressure backflow preventer on the ¾" water line. A backflow preventer should be added to this line.

Priority: **Serious**
Replace domestic water lines within the building.

Priority: **Minor**
Provide gas meter on natural gas line into the building.

Treatment -- Electrical

Electrical - Infrastructure
Priority: **Serious**
The existing infrastructure within the Maintenance Shop is the main distribution for the entire Scotts Bluff complex. The existing equipment is at the end of its useful life with apparent weathering from the NEMA 1 classification within an exposed location. The existing distribution panel should be replaced with NEMA 3R rating to withstand the exposure to exterior conditions. The distribution panel should exceed the required breaker space for reconnection to the other panels throughout the facility, to eliminate the existing code violations, and provide spare for future needs.

Electrical - Branch Circuits
Priority: **Minor**
Existing branch circuits appear to be in good condition and adequate for the needs of the Maintenance Shop.

Electrical - General Power Outlets and Equipment
Priority: **Minor**
The existing wire and devices appear to be in good condition and adequate for the needs of the Maintenance Shop.

Electrical - Lighting Systems
Priority: **Serious**
Emergency lighting fixtures and exit signs are not present. New emergency lighting should be installed for safety within areas as required, notably in the maintenance bays where power interruption or power loss could be dangerous.

Electrical - Telecommunications
Priority: **Minor**
Existing telecommunications are adequate for the facility use. Potential for additional lines and/or data connections are to be added if required or desired by the park. Any new lines should be provided in conduit per the NPS standards. Consider providing new conduit for existing lines not currently routed through conduit, specifically in the maintenance bay areas.

Electrical - Fire Alarm and Security System
Priority: **Serious**
System functionality was unclear from the poor condition of the existing fire alarm devices, and coverage is lacking per National Fire Protection Association (NFPA) 72 Section 7.5. The existing system should be removed and replaced with new system. Consider tying into main Fire Alarm Control Panel (FACP) in Visitor Center for added functionality and reliability.

Security is virtually non-existent in this building aside from a handful of motion lights. Consider providing new security devices and tying into existing security system at Visitor Center for security and functionality.

Electrical - Lightning Protection
Priority: **Minor**
No lightning protection system exists. Lightning protection is not a code requirement, but would provide additional protection for the building's equipment and operations. Consider the installation of a

lightning protection system if required and desired by the park.

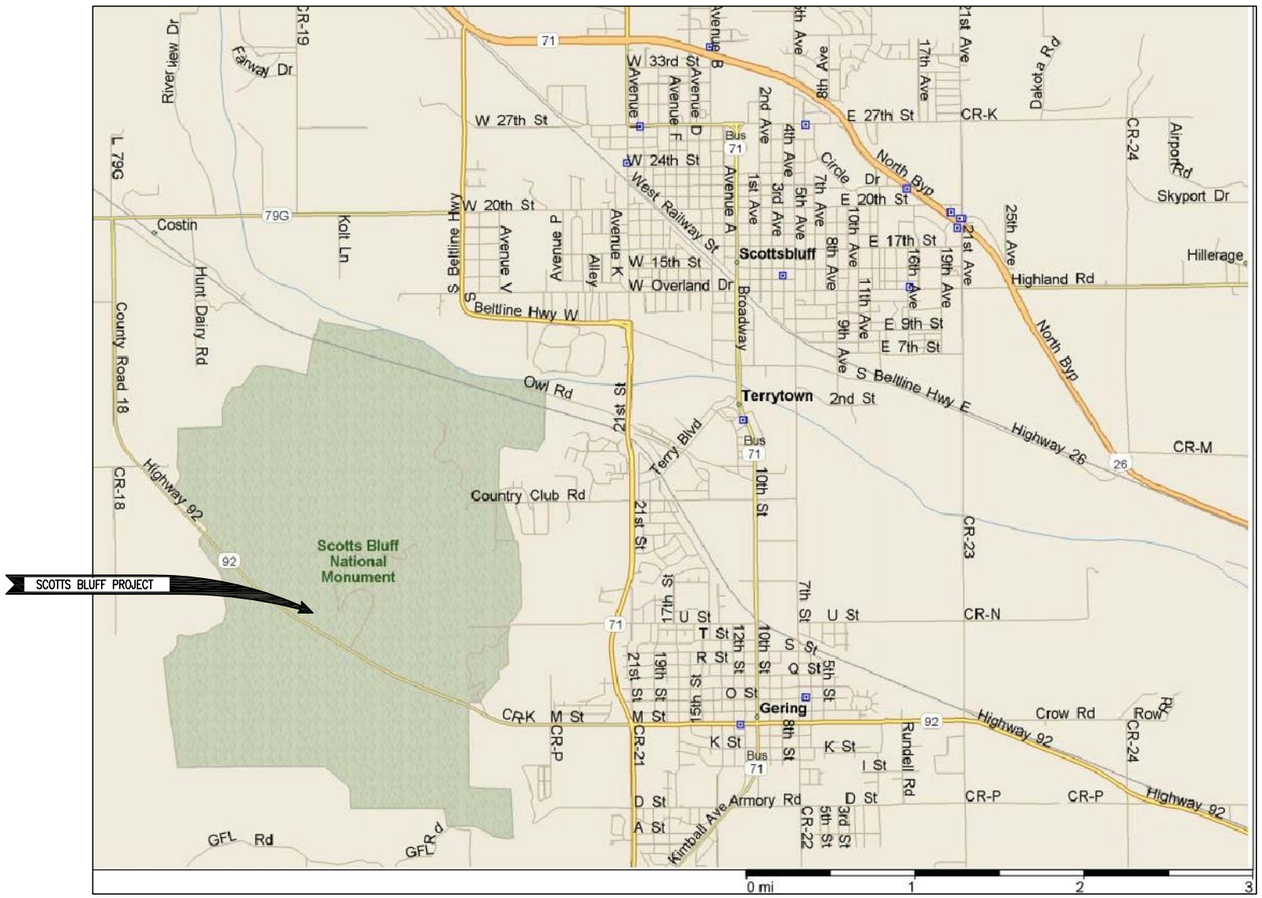
Appendix

Appendix A: 2015 Existing Conditions Drawings
Appendix B: Estimate of Probable Cost
Appendix C: 2015 Building Development and Feature Study
Appendix D: 2016 Visitor Center VA Treatment Alternatives
Appendix E: Paint and Material Analysis
Appendix F: Bibliography
Appendix G: 2002 100% Visitor Center HSR Introduction
Appendix H: 2002 100% Visitor Center HSR Part 2 Treatments
Appendix I: Hazardous Materials Report

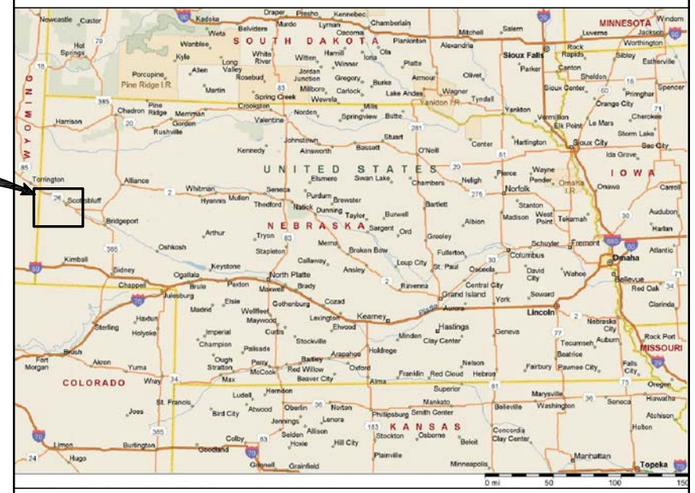
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Appendix A: 2015 Existing Conditions Drawings

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PROJECT AREA



MIDWEST
NEBRASKA

SCOTTS BLUFF NATIONAL MONUMENT

ARCHITECTS	Mark	Sheet	REVISION	Date	Initial
ANDERSON HALLAS ARCHITECTS, P.C. GOLDEN, COLORADO 80401					

QUALITY DESIGN CERTIFICATION

- ☐ Prepared in Accordance with design Development (Title I) _____ Drawing No.
  OR
- ☐ Variance from Design Development (Title I) Approved by Superintendent on _____ Date
  OR
- ☐ Construction Drawing Not Preceded by Design Development (Title I)

Project Manager _____ Date

EXISTING CONDITIONS

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF PROJECT
EXISTING CONDITIONS
LOCATION WITHIN PARK
SCOTTS BLUFF NATIONAL MONUMENT
NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

DRAWING NO. 317 127432
PMIS/PKG NO. 152851
SHEET 1 OF 23

BASIC DATA:

10/29/15 10:26 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\GEN\01 - 00-0 - SCOTTSBLUFF.DWG IMAGES: ..\BASES\SCOTTSBLUFF.JPG; ..\BASES\NEBRASKA.JPG;

ABBREVIATIONS

#	POUND(S) or NUMBER
&	AND
<	ANGLE
@	AT
A/V	AUDIO VISUAL
ABA	ARCHITECTURAL BARRIERS ACT
ABV	ABOVE
ACM	ASBESTOS CONTAINING MATERIAL
ACT	ACOUSTICAL CEILING TILE
ADD	ADDENDUM
ADJ	ADJACENT or ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECTURAL
ASPH	ASPHALT
B.O.	BOTTOM OF
BLDG	BUILDING
BLKG	BLOCKING
BR	BACKER ROD
BTWN	BETWEEN
CAB	CABINET
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CONTRACTING OFFICER
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
CTBB	CEMENTITIOUS TILE BACKER BOARD
CTR	CENTER
DBL	DOUBLE
DEMO	DEMOLITION
DET	DETAIL
DF	DRINKING FOUNTAIN
DIAM	DIAMETER
DIM	DIMENSION
DN	DOWN
DS	DOWNSPOUT
<E>	EXISTING
E	EAST
EA	EACH
EG	FOR EXAMPLE
ELEC	ELECTRICAL
ELEV	ELEVATION
EMER	EMERGENCY
ENGR	ENGINEER
EQ	EQUAL
EQP	EQUIPMENT
ETR	EXISTING TO REMAIN
EXT	EXTERIOR
FACP	FIRE ALARM CONTROL PANEL
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FIN	FINISH(ED)
FIXT	FIXTURE
FLR	FLOOR(ING)
FO	FACE OF
FP	FIRE PROTECTION
FRP	FIBERGLASS REINFORCED PANEL(ING)
FT	FEET
FTG	FOOTING
FURR	FURRING
GA	GAUGE or GYPSUM ASSOCIATION
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GD	GRADE
GL	GLASS or GLAZING
GND	GROUND
GWB	GYPSUM WALL BOARD
HM	HOLLOW METAL
HAZMAT	HAZARDOUS MATERIAL
HDR	HEADER
HDW	HARDWARE
HORIZ	HORIZONTAL
HT	HEIGHT
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
INFO	INFORMATION
INS	INSULATION or INSULATED
INT	INTERIOR
JT	JOINT
LAV	LAVATORY
LIN	LINOLEUM
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL ELECTRICAL AND PLUMBING
MFG	MANUFACTURING
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
<N>	NEW
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLUMB	PLUMBING
PT	PAINT
PTD	PAINTED
PWD	PLYWOOD
QT	QUARRY TILE
RAD	RADIUS
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFER TO or REFERENCE
REINF	REINFORCED
RELOC	RELOCATE(D)
REQ	REQUIRED
REV	REVISE, REVISED or REVISION
RM	ROOM
RO	ROUGH OPENING
RS	ROUGH SAWN
(S)	SEALANT
S	SOUTH
SCHED	SCHEDULE
SF	SQUARE FEET
SHTG	SHEATHING
SIM	SIMILAR
SOG	SLAB ON GRADE
SPEC	SPECIFICATION(S)
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STN	STAIN
STRUC	STRUCTURE or STRUCTURAL
(T)	TEMPERED
T&G	TONGUE AND GROOVE
T.O.	TOP OF
TD	THRESHOLD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VB	VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VIN	VINYL
VTR	VENT THROUGH ROOF
W	WEST
W/	WITH
W/O	WITHOUT
WD	WOOD
WIN	WINDOW

SYMBOLS

ROOM XXX — ROOM TAG

XXX — DOOR TAG

X — WINDOW TAG

X — KEY NOTE

NORTH ARROW

X / A5.3 — DETAIL CALLOUT

2 — COLUMN GRID

X / XX — EXTERIOR ELEVATION TAG

X / A8.0 — INTERIOR ELEVATION TAG

X / XX — SECTION TAG

X — WALL TAG

TD — THRESHOLD

X REV — REVISION TAG

LEVEL 100'-0" — ELEVATION TAG

MATERIAL LEGEND

- PLYWOOD
- FINISH WOOD
- GWB
- CONCRETE
- BATT INSULATION
- STEEL
- STONE (PLAN/SECTION)
- STONE (ELEVATION)
- EARTH

INDEX

SHEET	SUB. SHT.	NAME OF SHEET
GENERAL 1	G0.0	ARCHITECTURAL COVER SHEET
2	G0.1	INDEX, AND GENERAL NOTES
3	G0.2	SITE PLAN
ARCHITECTURAL 4	A1.0	1938 RESIDENCE MAIN LEVEL FLOOR PLAN
5	A1.1	1938 RESIDENCE NORTH AND EAST ELEVATIONS
6	A1.2	1938 RESIDENCE SOUTH AND WEST ELEVATIONS
7	A1.3	1938 RESIDENCE ROOF PLAN
8	A1.4	1958 RESIDENCE BASEMENT AND MAIN LEVEL FLOOR PLANS
9	A1.5	1958 RESIDENCE NORTH AND EAST ELEVATIONS
10	A1.6	1958 RESIDENCE SOUTH AND WEST ELEVATIONS
11	A1.7	1958 RESIDENCE ROOF PLAN
12	A1.8	MAINTENANCE SHOP MAIN LEVEL FLOOR PLAN PART A & B
13	A1.9	MAINTENANCE SHOP MEZZANINE FLOOR PLAN (PART B ONLY)
14	A1.10	MAINTENANCE SHOP ELEVATIONS PART A & B
15	A1.11	MAINTENANCE SHOP ELEVATIONS
16	A1.12	MAINTENANCE SHOP ROOF PLAN PART A & B
17	A1.13	VISITOR CENTER BASEMENT FLOOR PLAN
18	A1.14	VISITOR CENTER MAIN LEVEL FLOOR PLAN
19	A1.15	VISITOR CENTER TOWER LEVEL FLOOR PLAN
20	A1.16	VISITOR CENTER ROOF PLAN
21	A1.17	VISITOR CENTER NORTH AND EAST ELEVATIONS
22	A1.18	VISITOR CENTER SOUTH AND WEST ELEVATIONS
23	A1.19	VISITOR CENTER SECTIONS

DESIGNED:	NAA
DRAWN:	DAM
TECH. REVIEW:	NAA
DATE:	10/29/2015

SUB SHEET NO. G0.1

TITLE OF SHEET: INDEX AND GENERAL NOTES

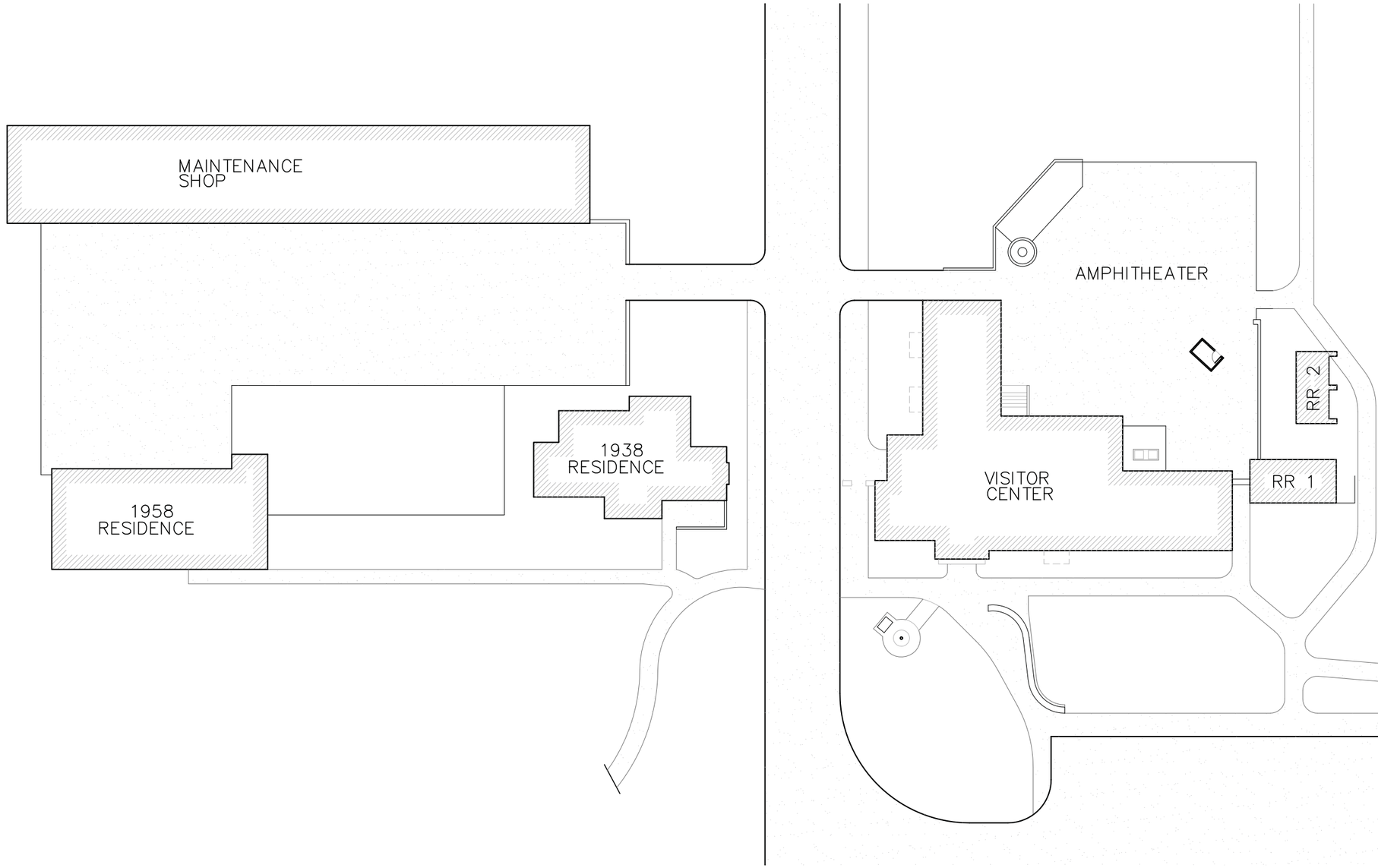
SCOTTS BLUFF NATIONAL MONUMENT

DRAWING NO. 317 / 127432

PMIS/PKG NO. 152851

SHEET 2 OF 23

10/29/15 10:29 DAVIDMILLER R20 N:\VA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\GEN\02 - G0-1-SCOTTSBLUFF.DWG



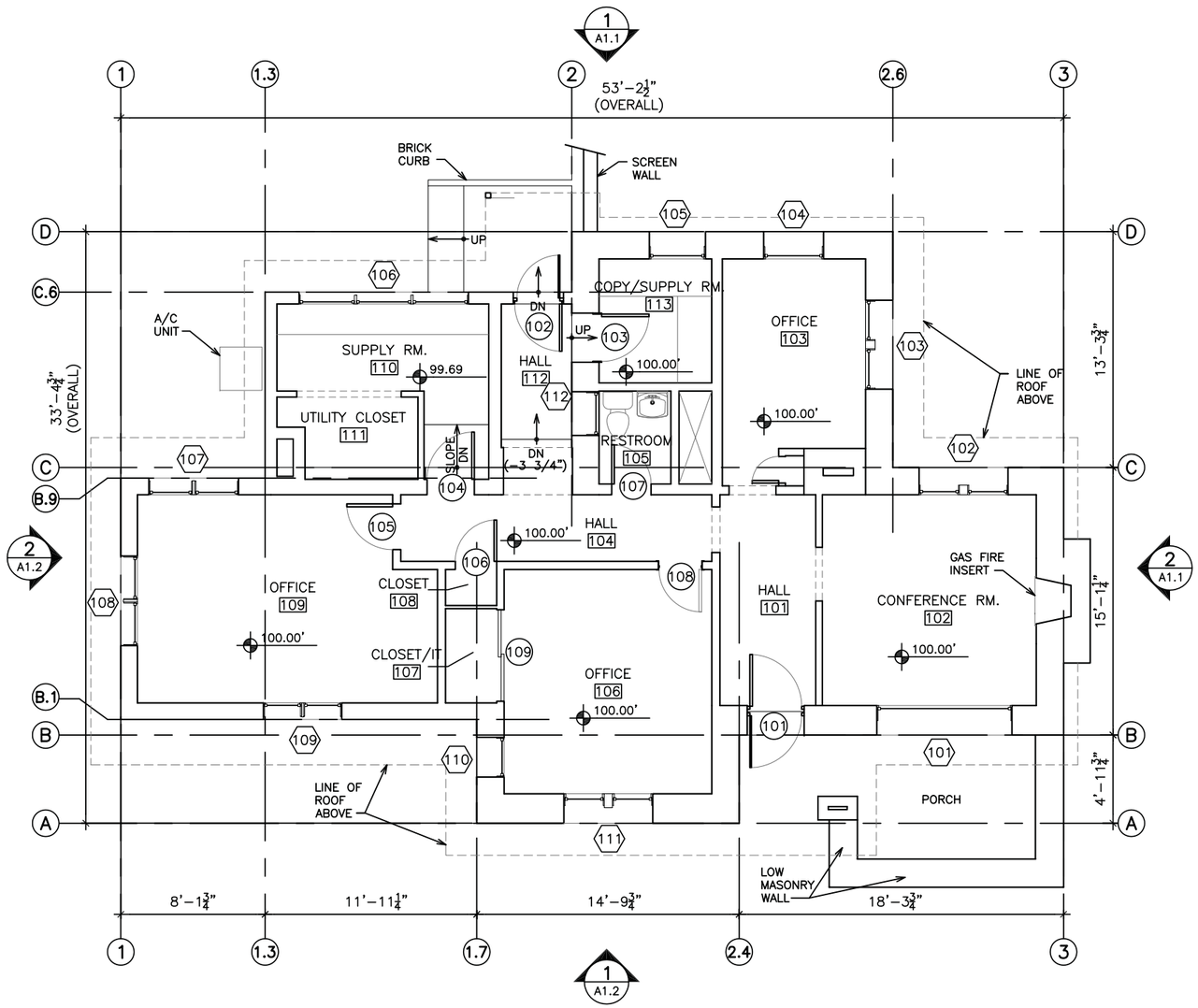
1 A1.8 SITE PLAN
SCALE A

SCALE A 16 0 16 32
SCALE OF FEET

45° BLDG

DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. G0.2	TITLE OF SHEET SITE PLAN SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 3 OF 23

10/29/15 11:48 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\GEN\03 - GO-2 - SITE PLAN - SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF - FLOOR PLANS.DWG;



1 A1.0 **1938 RESIDENCE – MAIN LEVEL PLAN**

SCALE Ⓐ

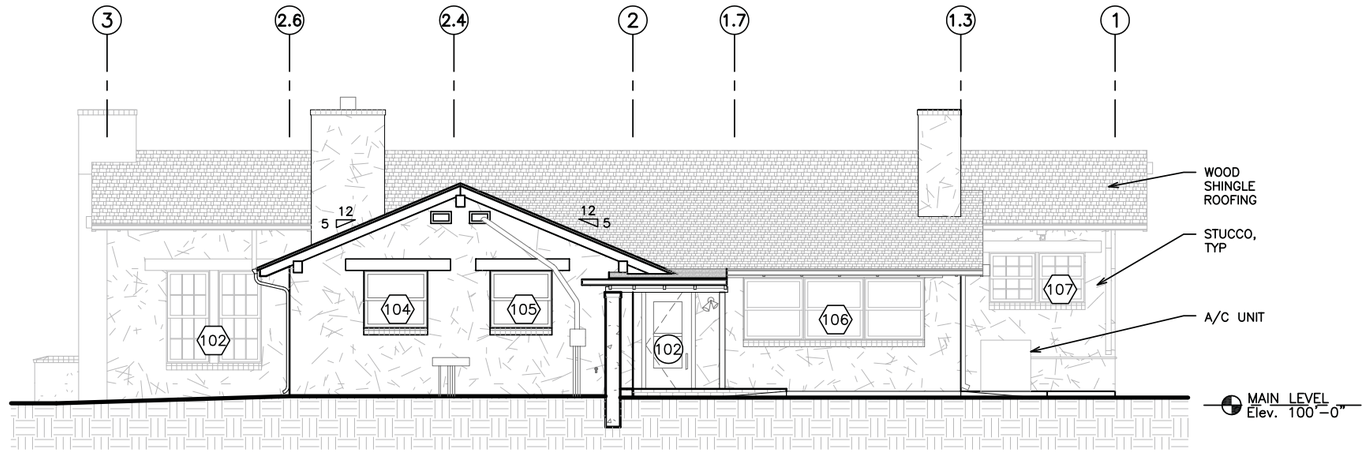
SCALE Ⓐ 4 0 4 8

SCALE OF FEET

45° BLDG

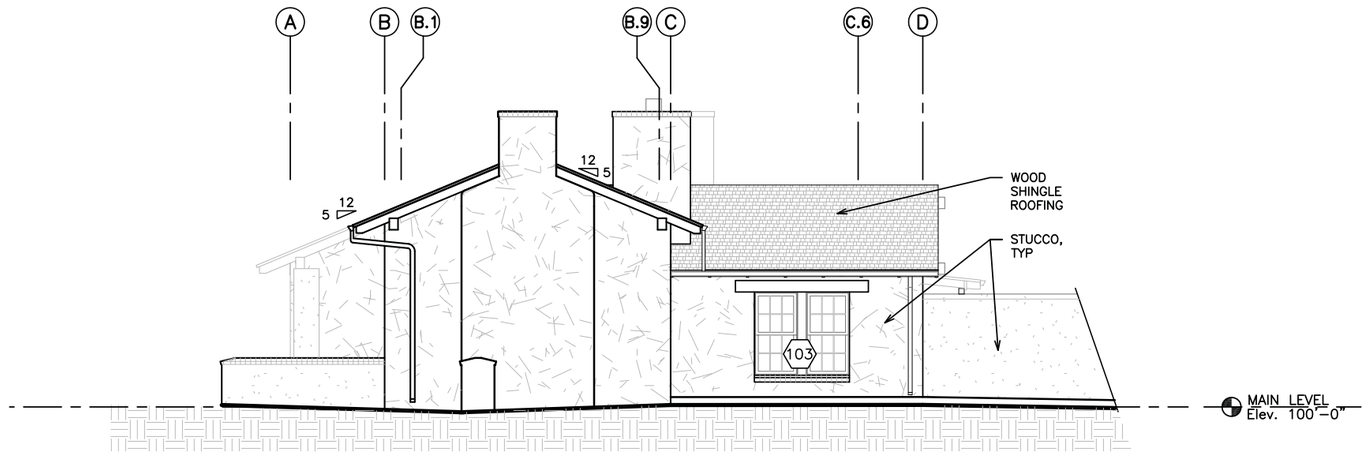
DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.0	TITLE OF SHEET 1938 RESIDENCE MAIN LEVEL FLOOR PLAN SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 4 OF 23

10/29/15 10:37 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\04 - A1-0-1938 RES - MAIN FLOOR PLAN - SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF - FLOOR PLANS.DWG;



1 / A1.1 1938 RESIDENCE – NORTH ELEVATION

SCALE Ⓐ



2 / A1.1 1938 RESIDENCE – EAST ELEVATION

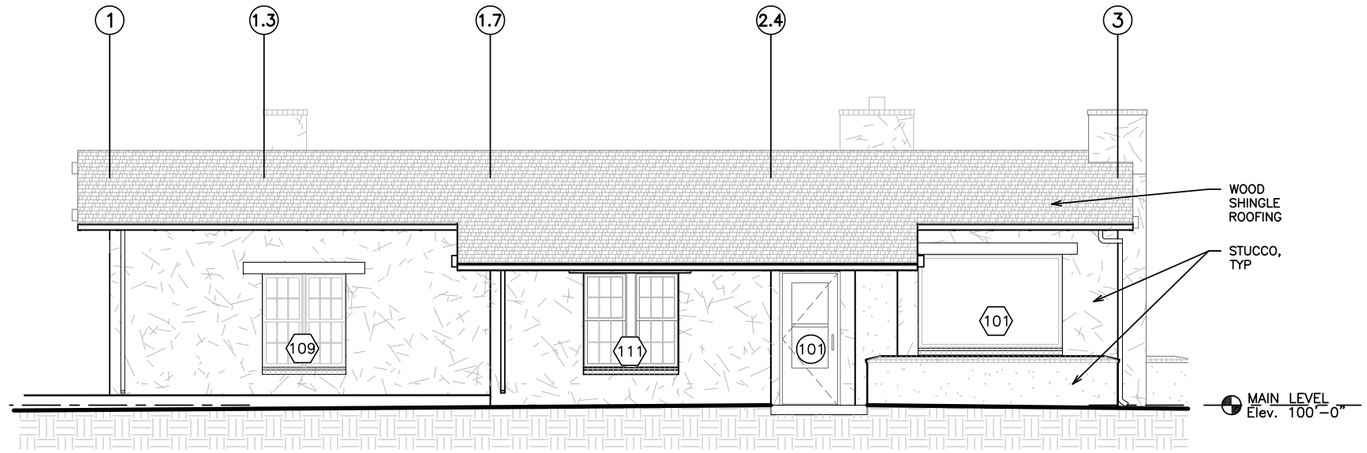
SCALE Ⓐ

SCALE Ⓐ 4 0 4 8

SCALE OF FEET

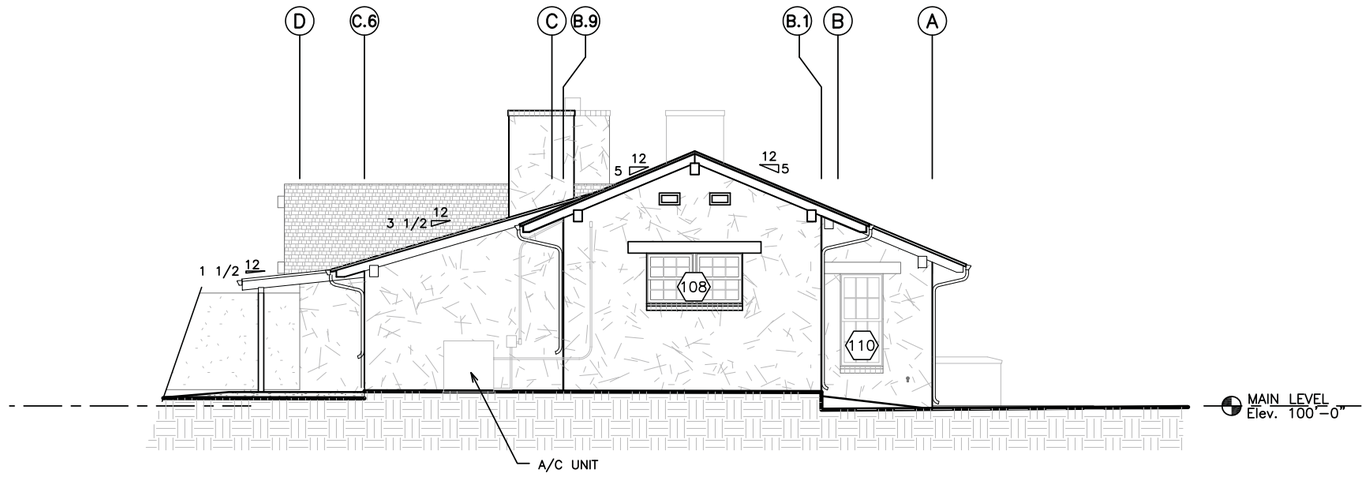
DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.1	TITLE OF SHEET 1938 RESIDENCE NORTH AND EAST ELEVATIONS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 5 OF 23

10/29/15 10:39 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\05 - A1-1-1938 RES - NORTH AND EAST ELEVATIONS - SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF - ELEVATIONS.DWG;



1 / A1.2 1938 RESIDENCE – SOUTH ELEVATION

SCALE (A)



2 / A1.2 1938 RESIDENCE – WEST ELEVATION

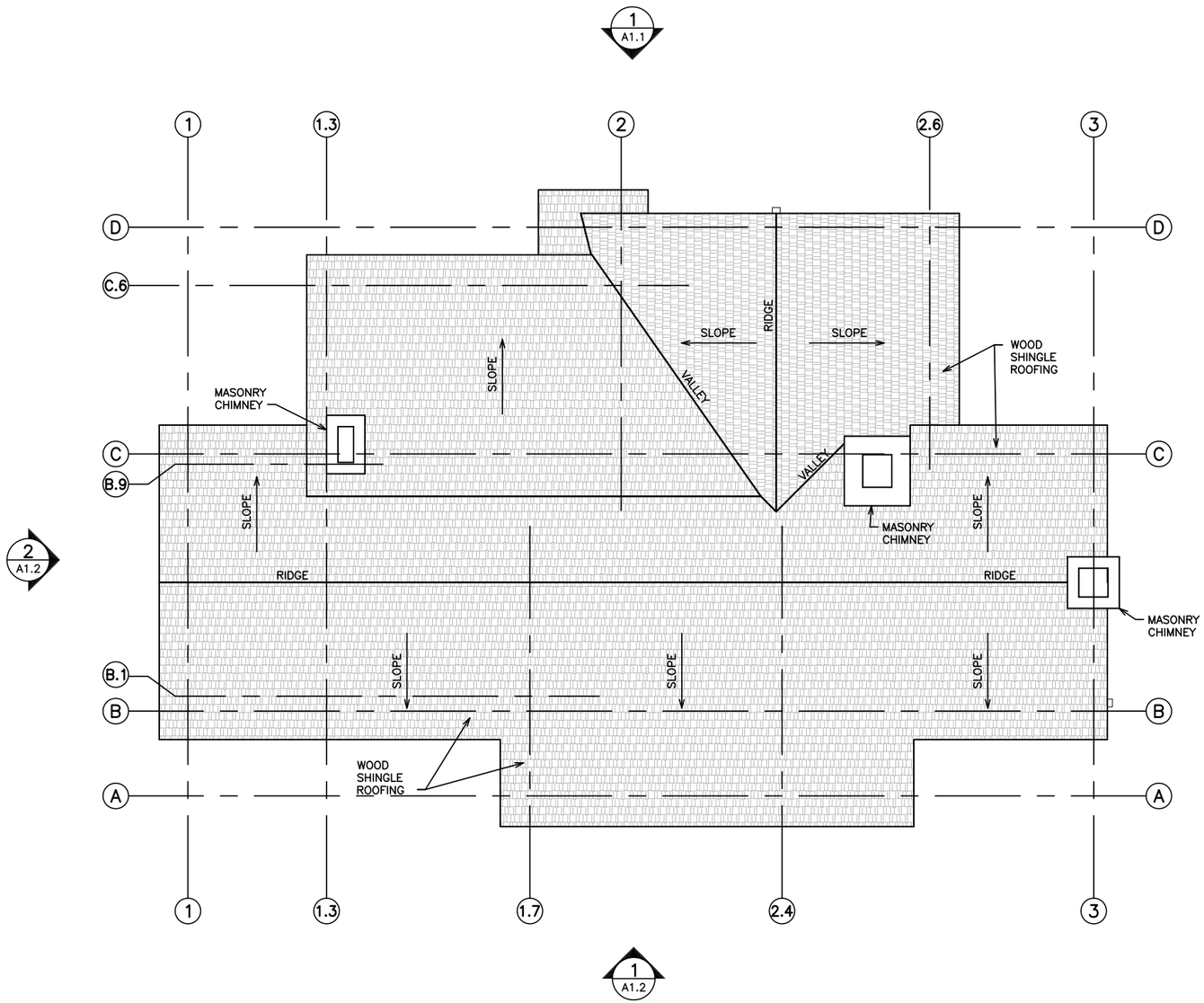
SCALE (A)

SCALE (A) 4 0 4 8

SCALE OF FEET

DESIGNED: ADDE DRAWN: DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.2	TITLE OF SHEET 1938 RESIDENCE SOUTH AND WEST ELEVATIONS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 6 OF 23

10/29/15 10:40 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\06 - A1-2-1938 RES - SOUTH AND WEST ELEVATIONS - SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF - ELEVATIONS.DWG;



1 A1.3 1938 RESIDENCE – ROOF PLAN

SCALE (A)

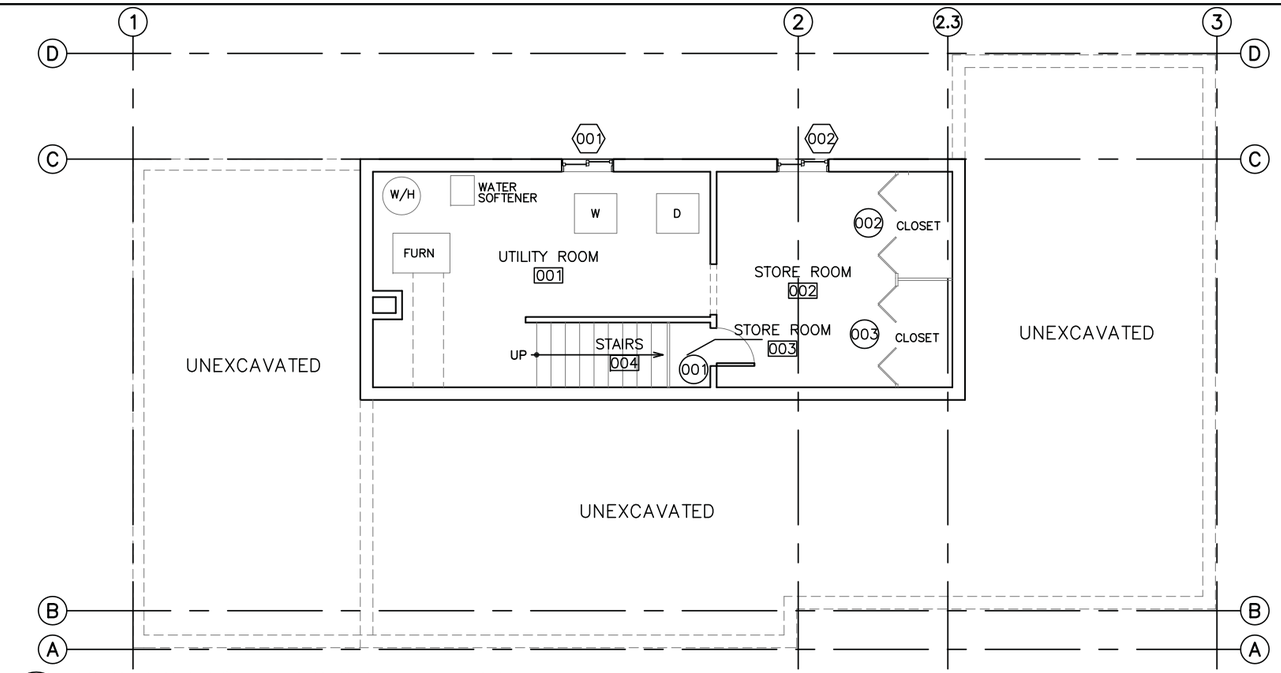
SCALE (A) 4 0 4 8

SCALE OF FEET

45° BLDG

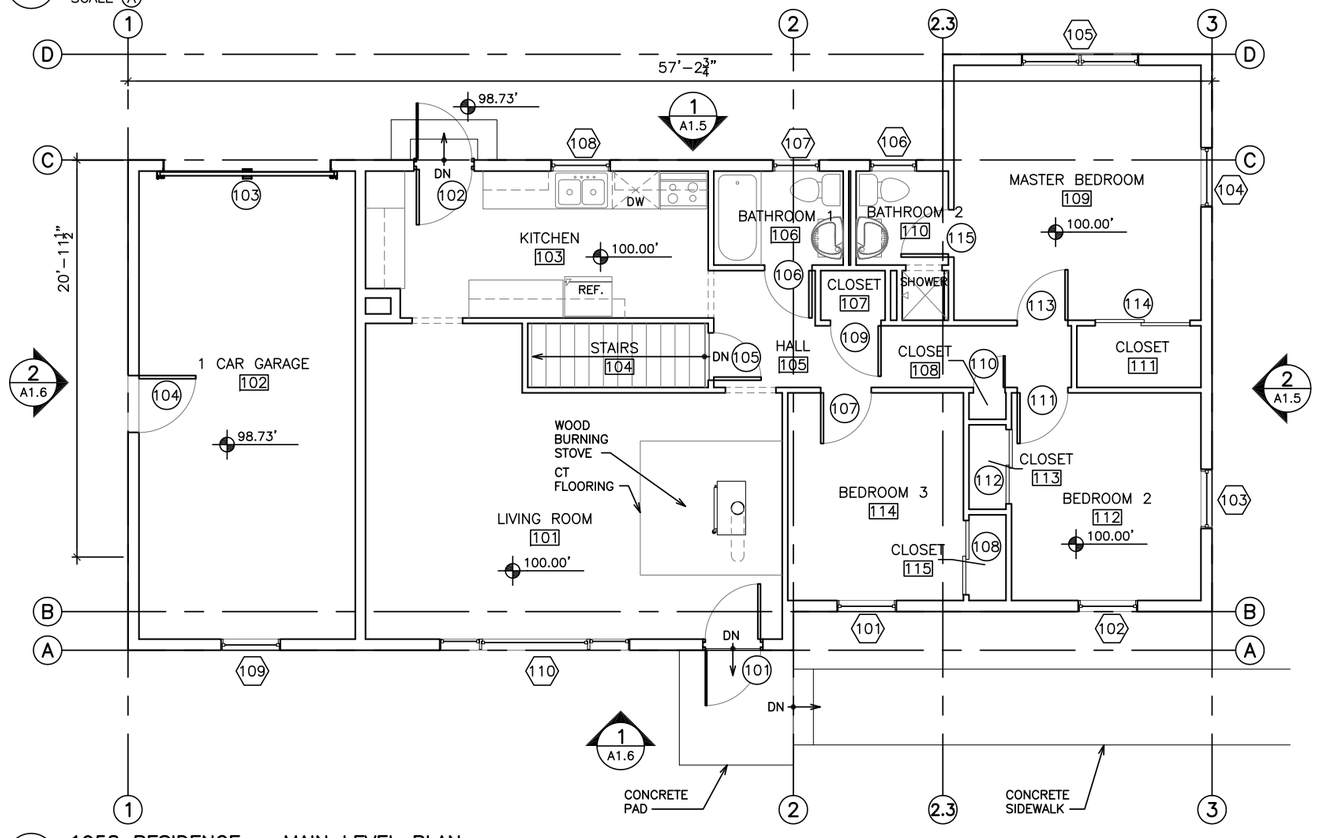
DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.3	TITLE OF SHEET 1938 RESIDENCE ROOF PLAN SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 7 OF 23

10/29/15 10:41 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\07 – A1-3-1938 RES – ROOF PLAN – SCOTTSBLUFF.DWG XREFS: ..\BASES\XA-SCOTTSBLUFF – FLOOR PLANS.DWG;



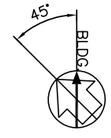
1 A1.4 **1958 RESIDENCE – BASEMENT LEVEL PLAN**

SCALE A



2 A1.4 **1958 RESIDENCE – MAIN LEVEL PLAN**

SCALE A

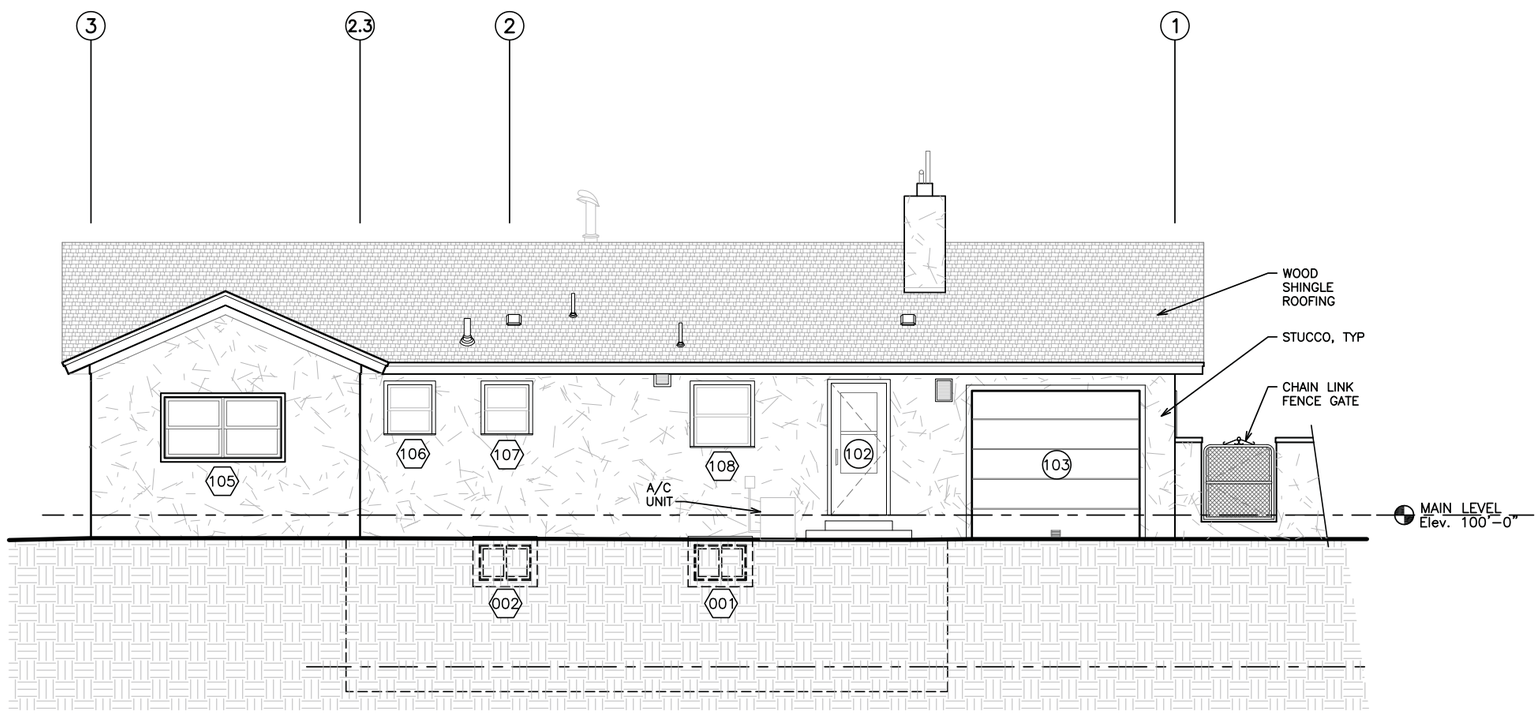


SCALE A 4 0 4 8

SCALE OF FEET

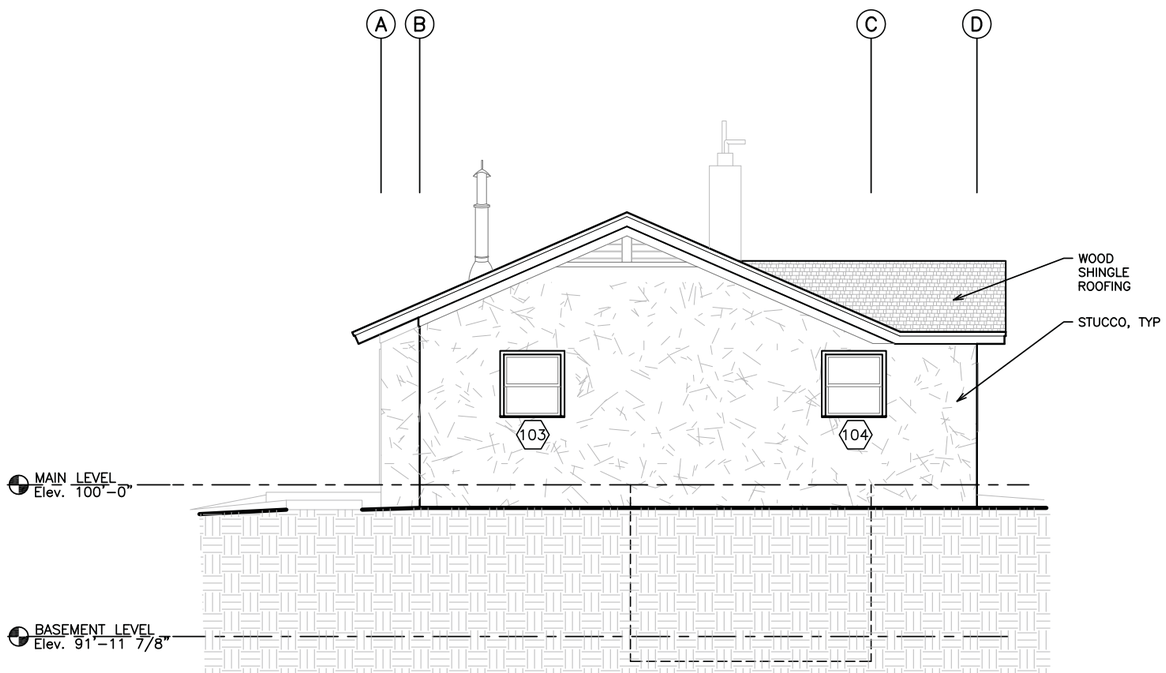
DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.4	TITLE OF SHEET 1958 RESIDENCE BASEMENT AND MAIN LEVEL FLOOR PLANS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 8 OF 23

10/29/15 10:42 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\08 - A1-4-1958 RES - BASEMENT AND MAIN FLOOR PLAN - SCOTTSBLUFF.DWG XREFS: ..\PASES\VA-SCOTTSBLUFF - FLOOR PLANS.DWG;



1 A1.5 1958 RESIDENCE – NORTH ELEVATION

SCALE Ⓐ



2 A1.5 1958 RESIDENCE – EAST ELEVATION

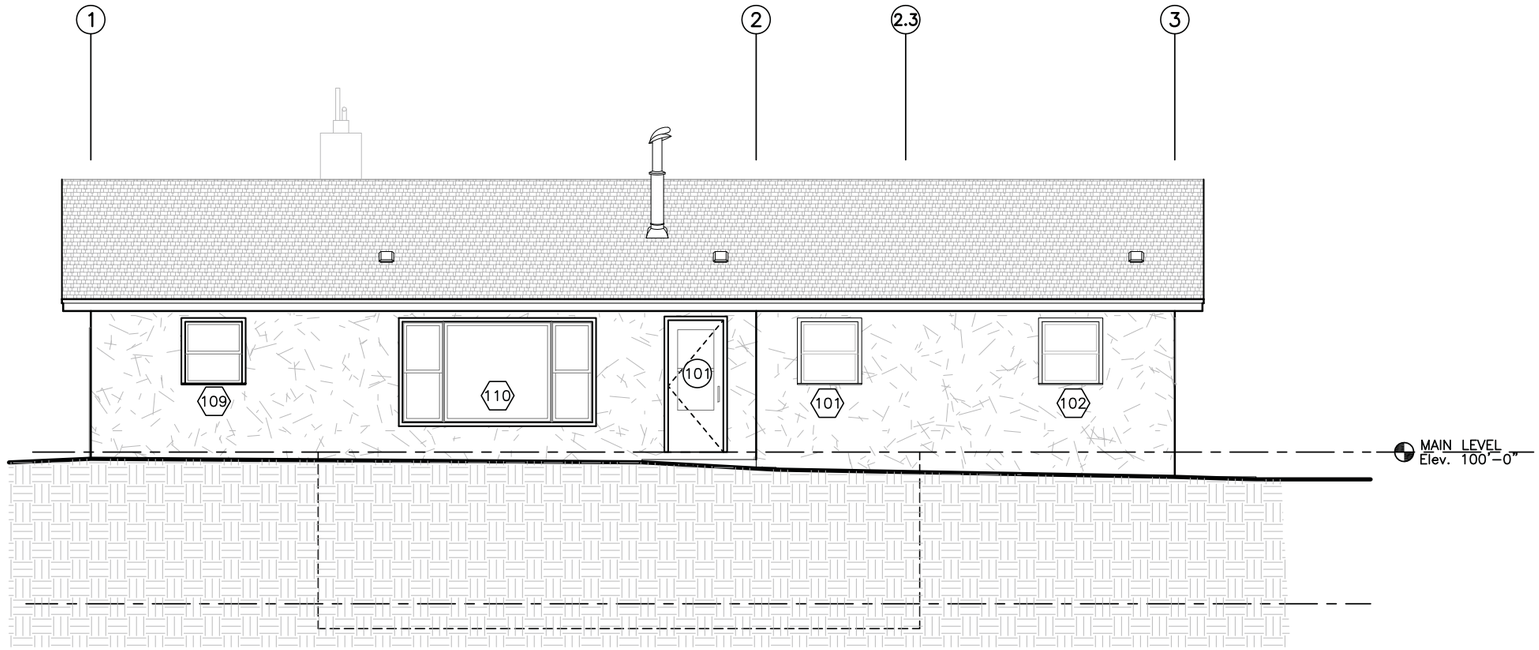
SCALE Ⓐ

SCALE Ⓐ 4 0 4 8

SCALE OF FEET

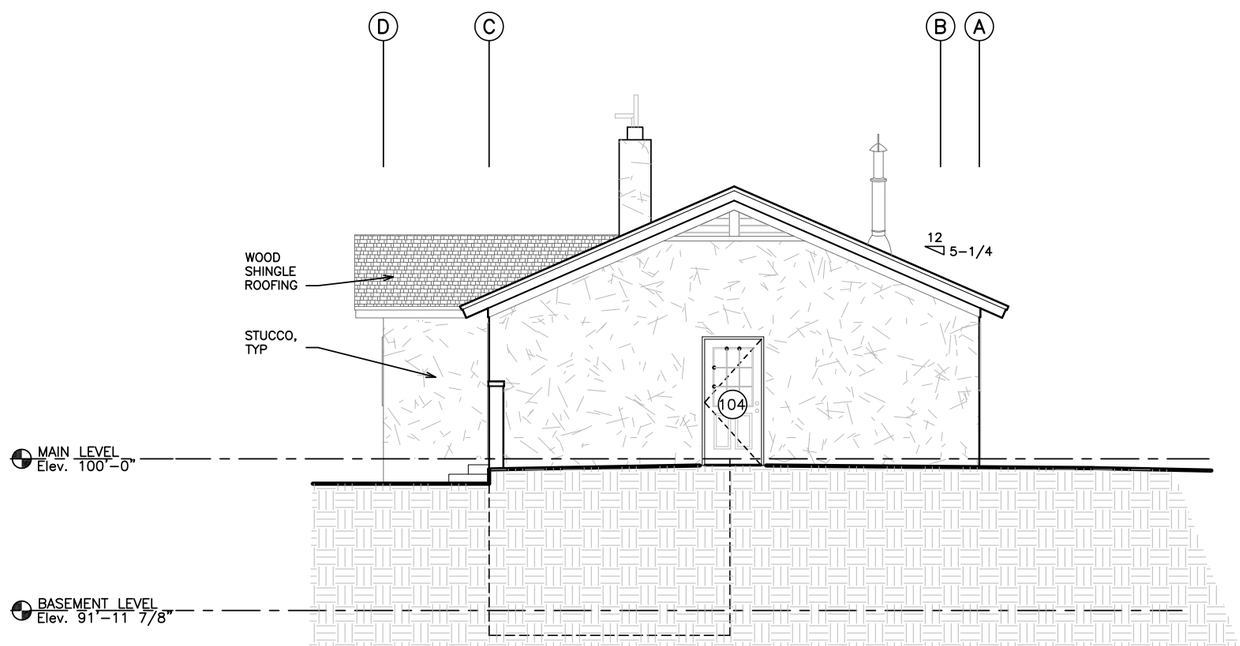
DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.5	TITLE OF SHEET 1958 RESIDENCE NORTH AND EAST ELEVATIONS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 9 OF 23

10/29/15 10:43 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\09 - A1-5-1958 RES - ELEVATIONS - SCOTTSBLUFF.DWG XREFS: ..\BASES\AA-SCOTTSBLUFF - ELEVATIONS.DWG;



1 A1.6 1958 RESIDENCE – SOUTH ELEVATION

SCALE A



2 A1.6 1958 RESIDENCE – WEST ELEVATION

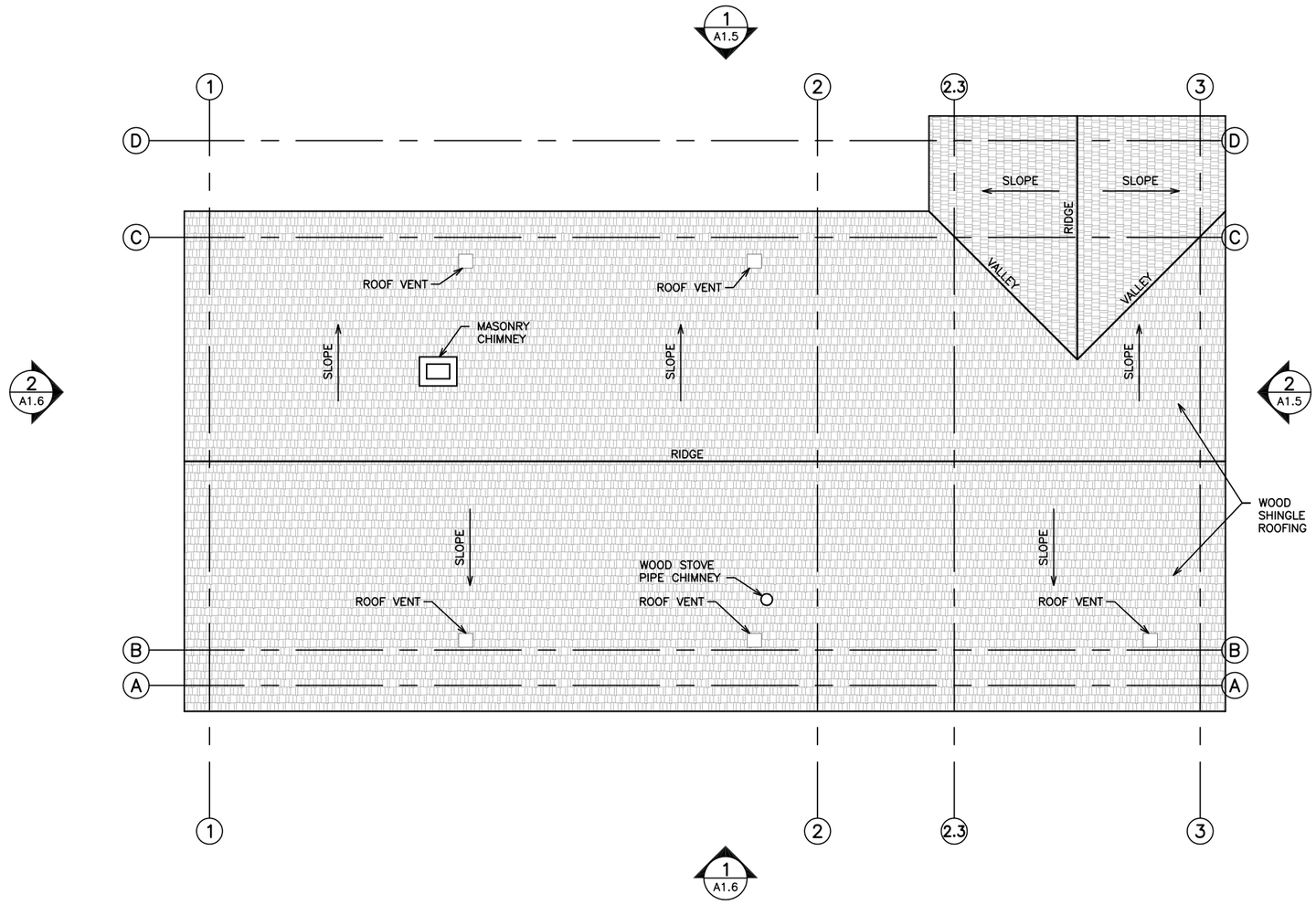
SCALE A

SCALE A 4 0 4 8

SCALE OF FEET

DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.6	TITLE OF SHEET 1958 RESIDENCE SOUTH AND WEST ELEVATIONS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 10 OF 23

10/29/15 10:45 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\10 - A1-6-1958 RES - ELEVATIONS - SCOTTSBLUFF.DWG XREFS: ..\BASES\AA-SCOTTSBLUFF - ELEVATIONS.DWG;

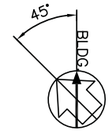


1 / A1.7 — 1958 RESIDENCE – ROOF PLAN

SCALE Ⓐ

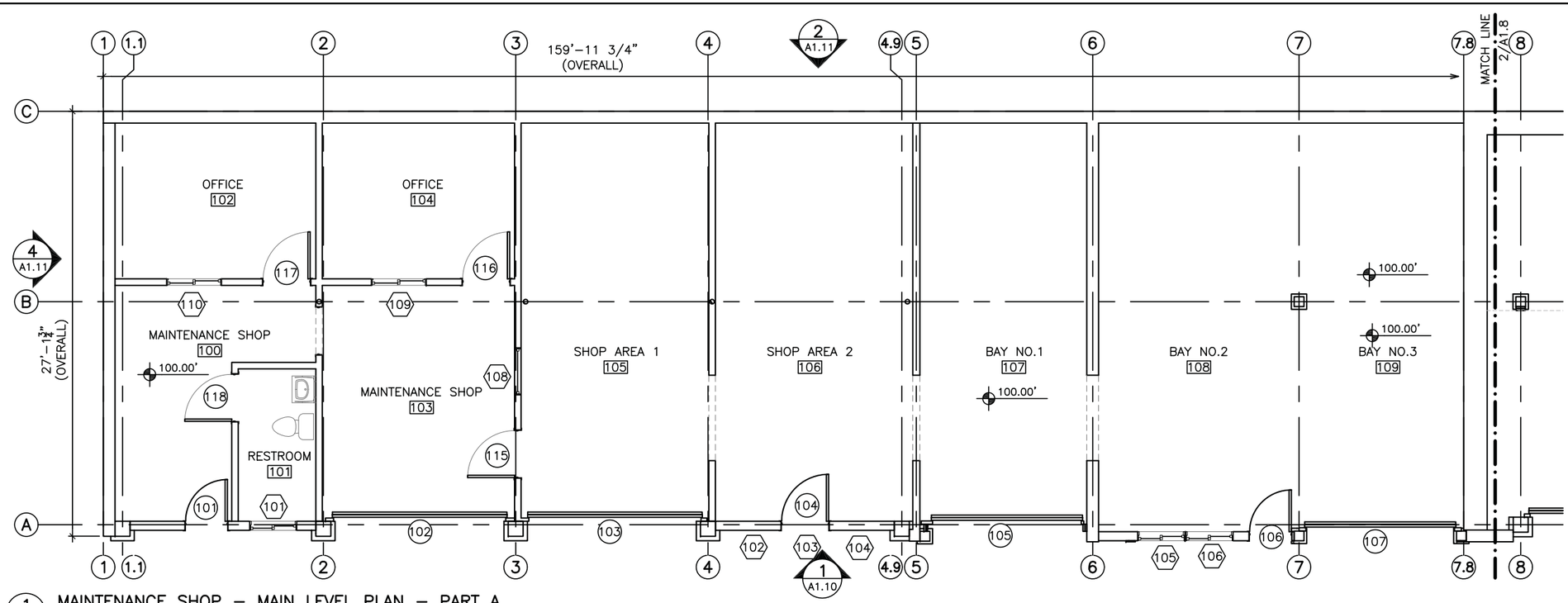
SCALE Ⓐ 4 0 4 8

SCALE OF FEET



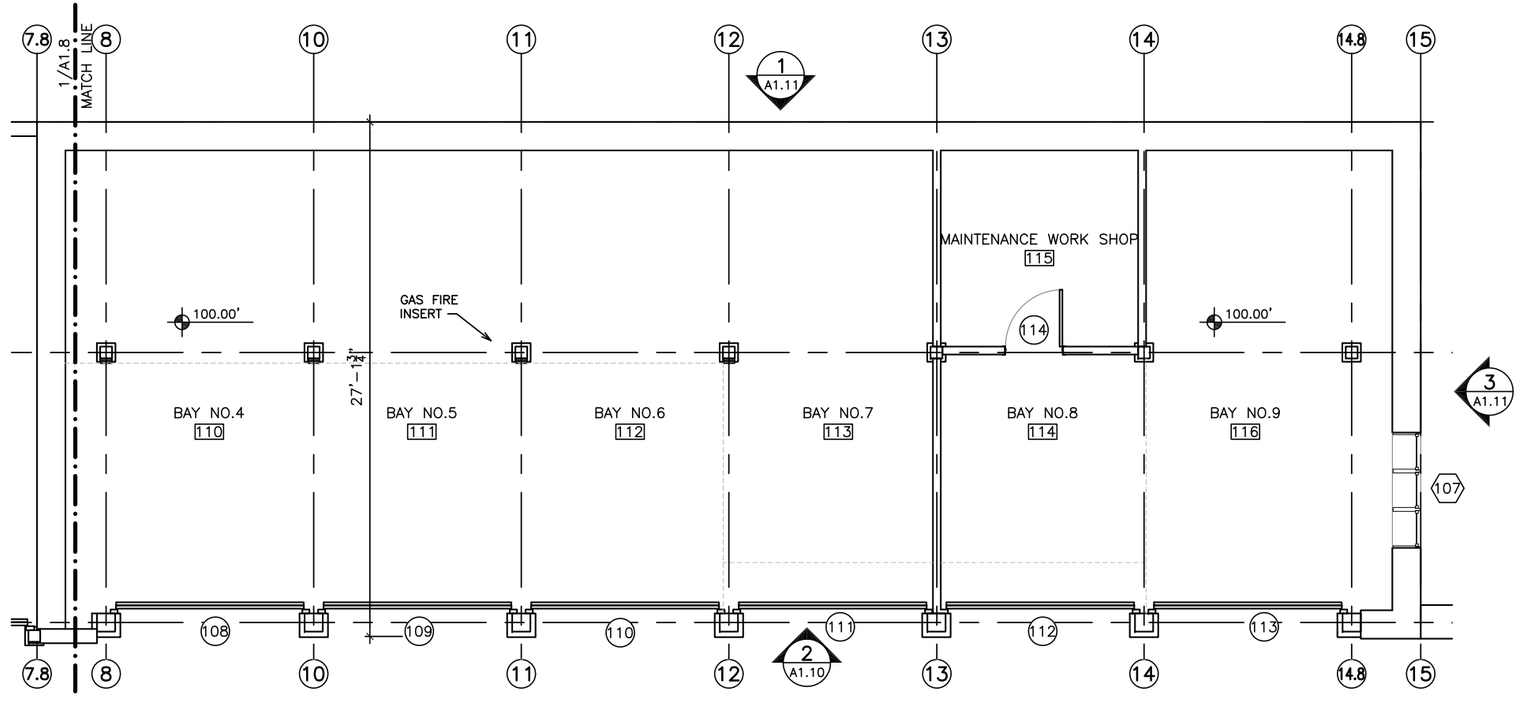
DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.7	TITLE OF SHEET 1958 RESIDENCE ROOF PLAN SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 11 OF 23

10/29/15 10:46 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\11 - A1-7-1958 RES - ROOF PLAN - SCOTTSBLUFF.DWG XREFS: ..\BASES\XA-SCOTTSBLUFF - FLOOR PLANS.DWG;



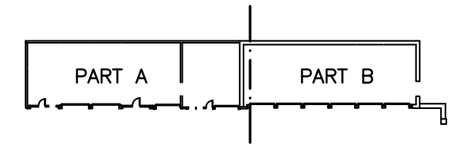
1 A1.8 MAINTENANCE SHOP – MAIN LEVEL PLAN – PART A

SCALE A



2 A1.8 MAINTENANCE SHOP – MAIN LEVEL PLAN – PART B

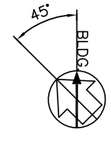
SCALE A



MAINTENANCE SHOP – KEYPLAN

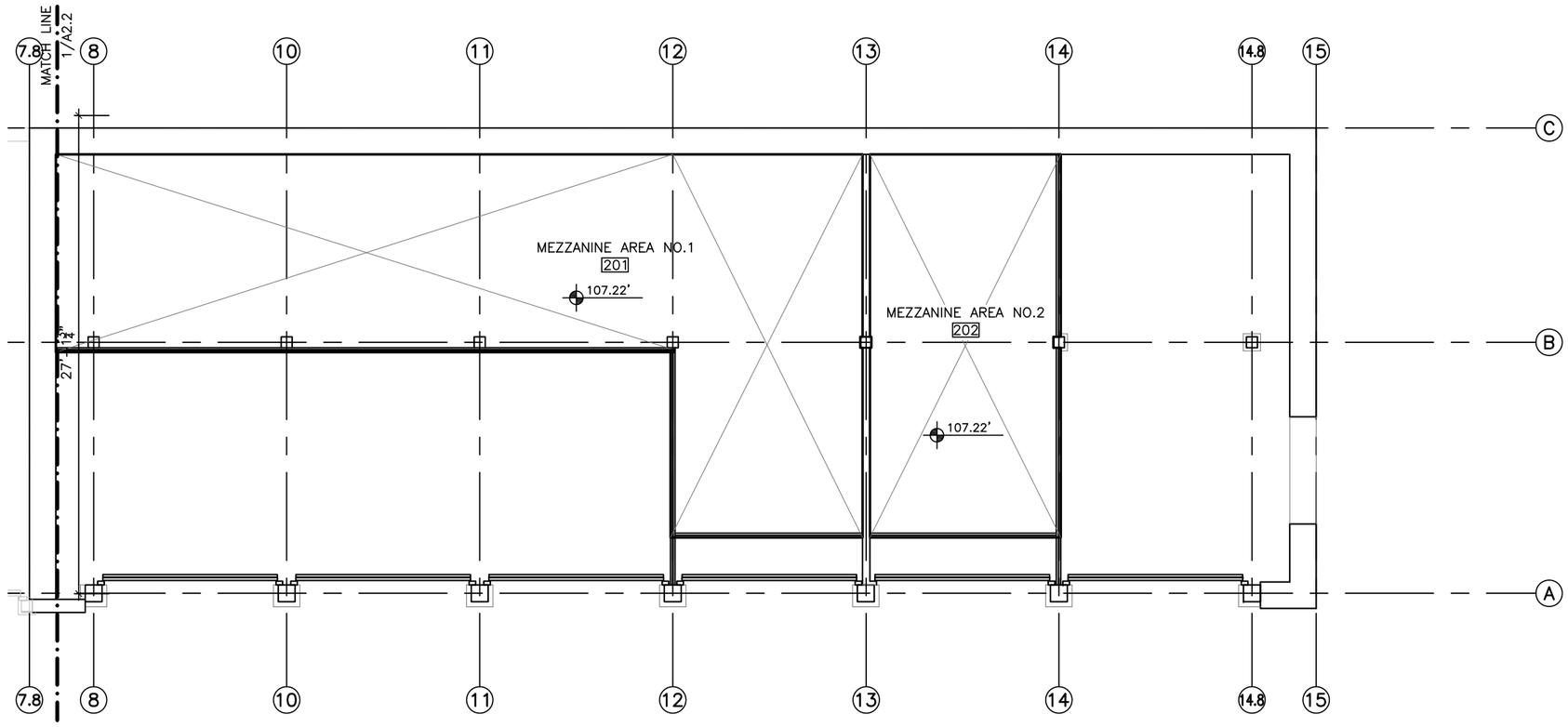
SCALE A 4 0 4 8

SCALE OF FEET



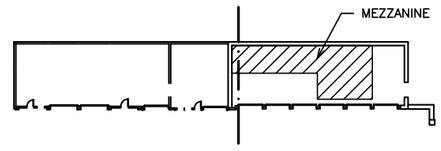
DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.8	TITLE OF SHEET MAINTEINANCE SHOP MAIN LEVEL FLOOR PLAN PART A & B SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 12 OF 23

10/29/15 10:47 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\12 - A1-8-1981 MAINT - MAIN FLOOR PLAN - A AND B - SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF - FLOOR PLANS.DWG;



1 A1.9 MAINTENANCE SHOP – MEZZANINE FLOOR PLAN – PART B (ONLY)

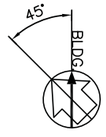
SCALE (A)



MAINTENANCE SHOP – KEYPLAN

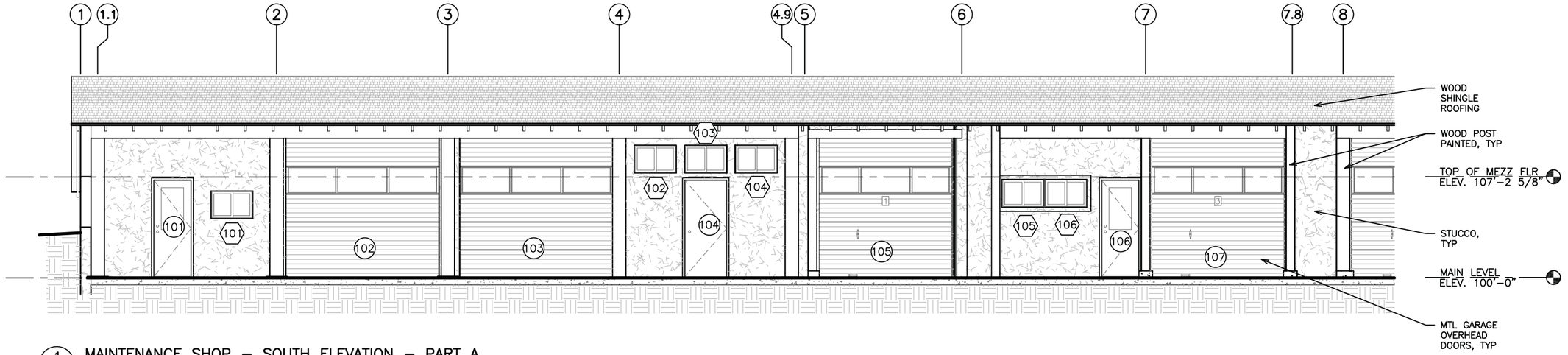
SCALE (A) 4 0 4 8

SCALE OF FEET



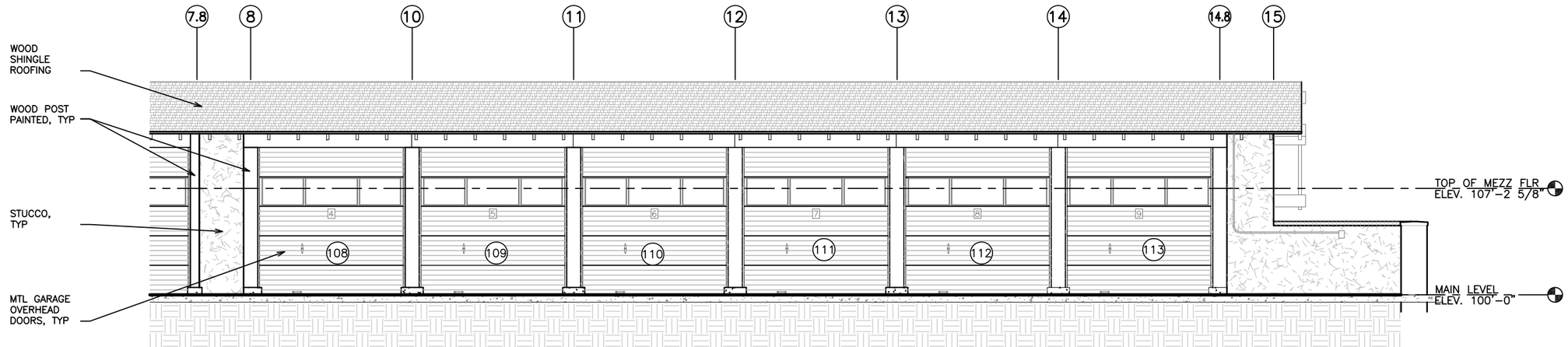
DESIGNED: ADDE CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.9	TITLE OF SHEET MAINTEINANCE SHOP MEZZANINE FLOOR PLAN PART B (ONLY) SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 13 OF 23

10/29/15 10:53 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\13 - A1-9-1981 MAINT - MAIN MEZZ FLOOR PLAN-B (ONLY) - SCOTTSBLUFF.DWG XREFS: ..\BASES\XA-SCOTTSBLUFF - FLOOR PLANS.DWG;



1 / A1.10 MAINTENANCE SHOP – SOUTH ELEVATION – PART A

SCALE Ⓐ



2 / A1.10 MAINTENANCE SHOP – SOUTH ELEVATION – PART B

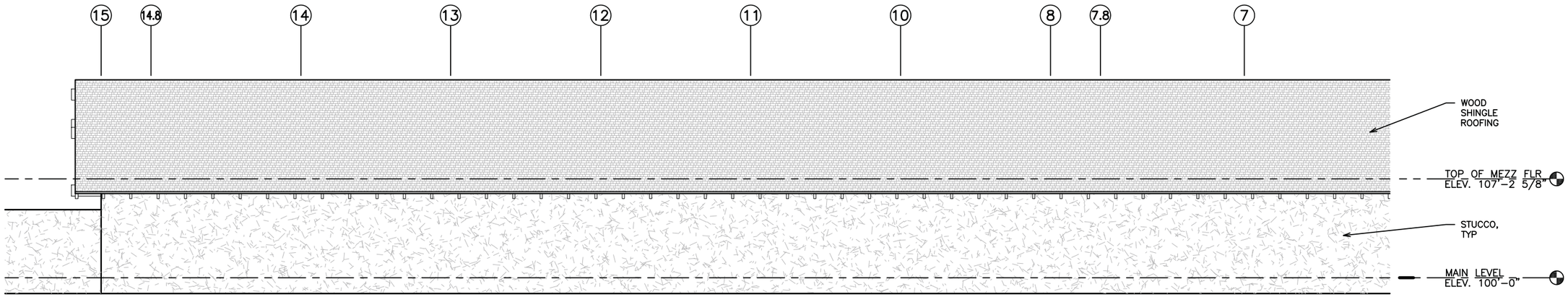
SCALE Ⓐ

SCALE Ⓐ 4 0 4 8

SCALE OF FEET

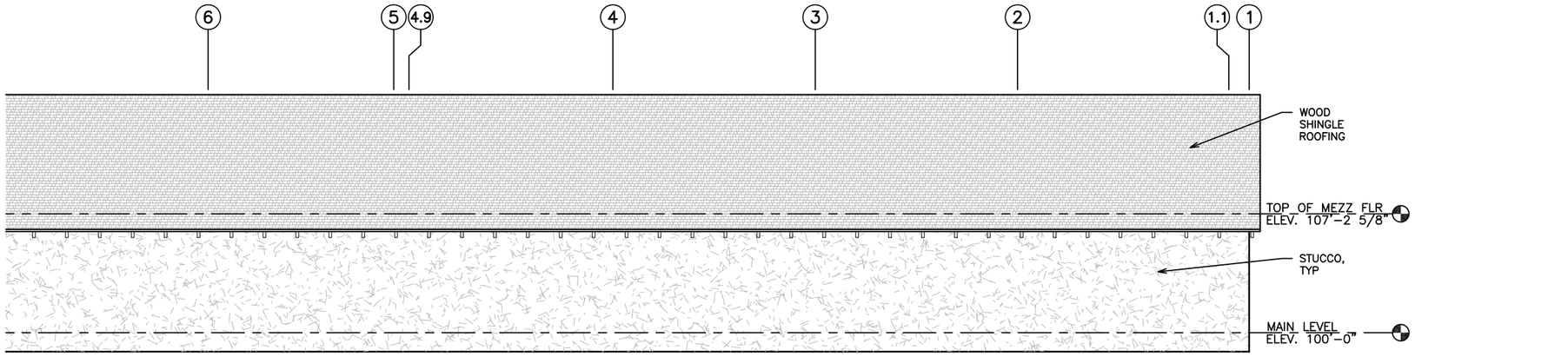
DESIGNED: DAM CADD: DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.10	TITLE OF SHEET MAINTENANCE SHOP ELEVATIONS PART – A & B SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 14 OF 23

10/29/15 10:55 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\14 - A1-10-1981 MAINT - ELEVATIONS - SCOTTSBLUFF.DWG XREFS: ..\BASES\XA-SCOTTSBLUFF - ELEVATIONS.DWG;



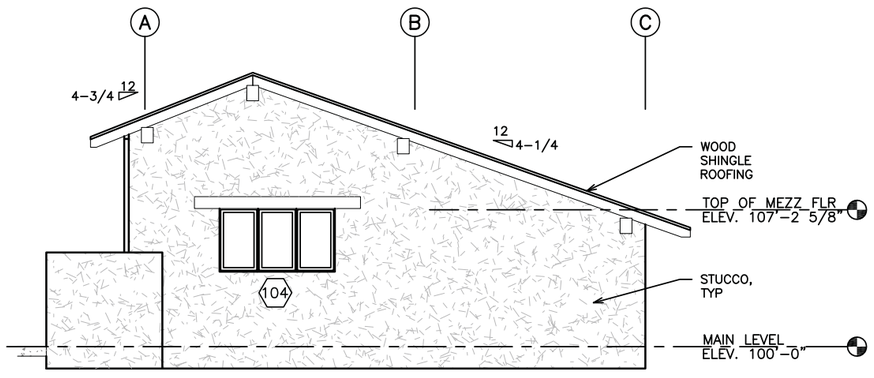
1 A1.11 MAINTENANCE SHOP – NORTH ELEVATION – PART A

SCALE (A)



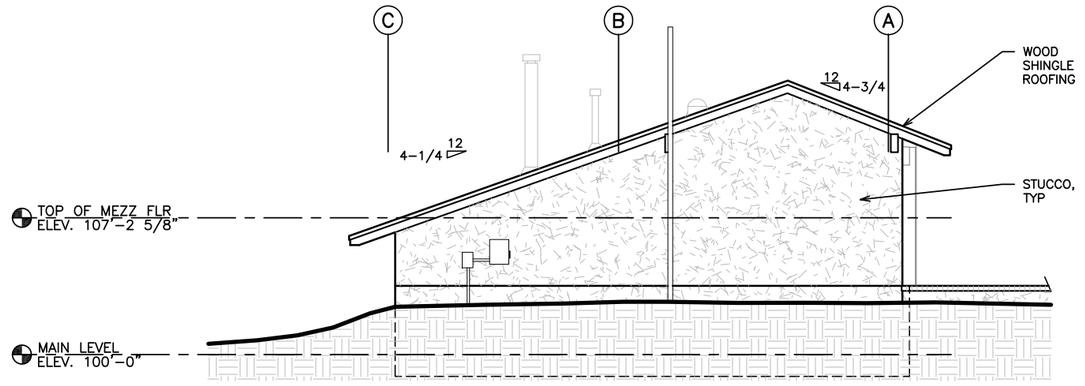
2 A1.11 MAINTENANCE SHOP – NORTH ELEVATION – PART B

SCALE (A)



3 A1.11 MAINTENANCE SHOP – EAST ELEVATION

SCALE (A)



4 A1.11 MAINTENANCE SHOP – WEST ELEVATION

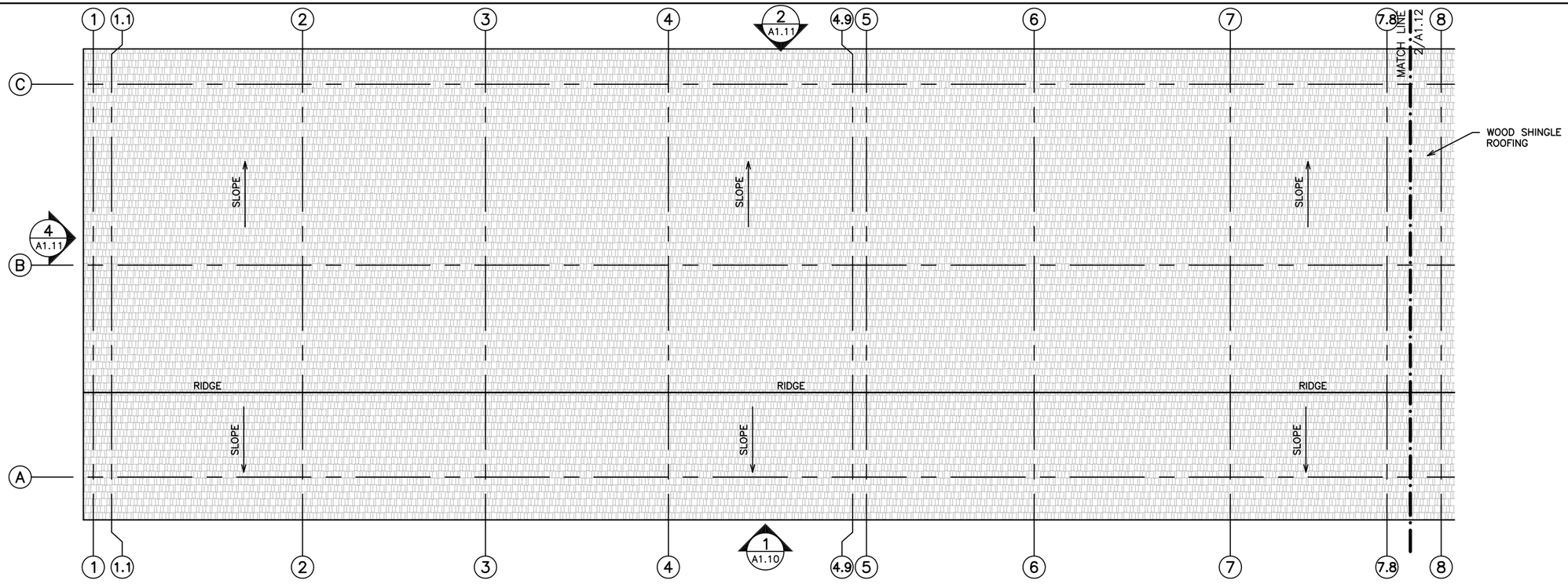
SCALE (A)

SCALE (A) 4 0 4 8

SCALE OF FEET

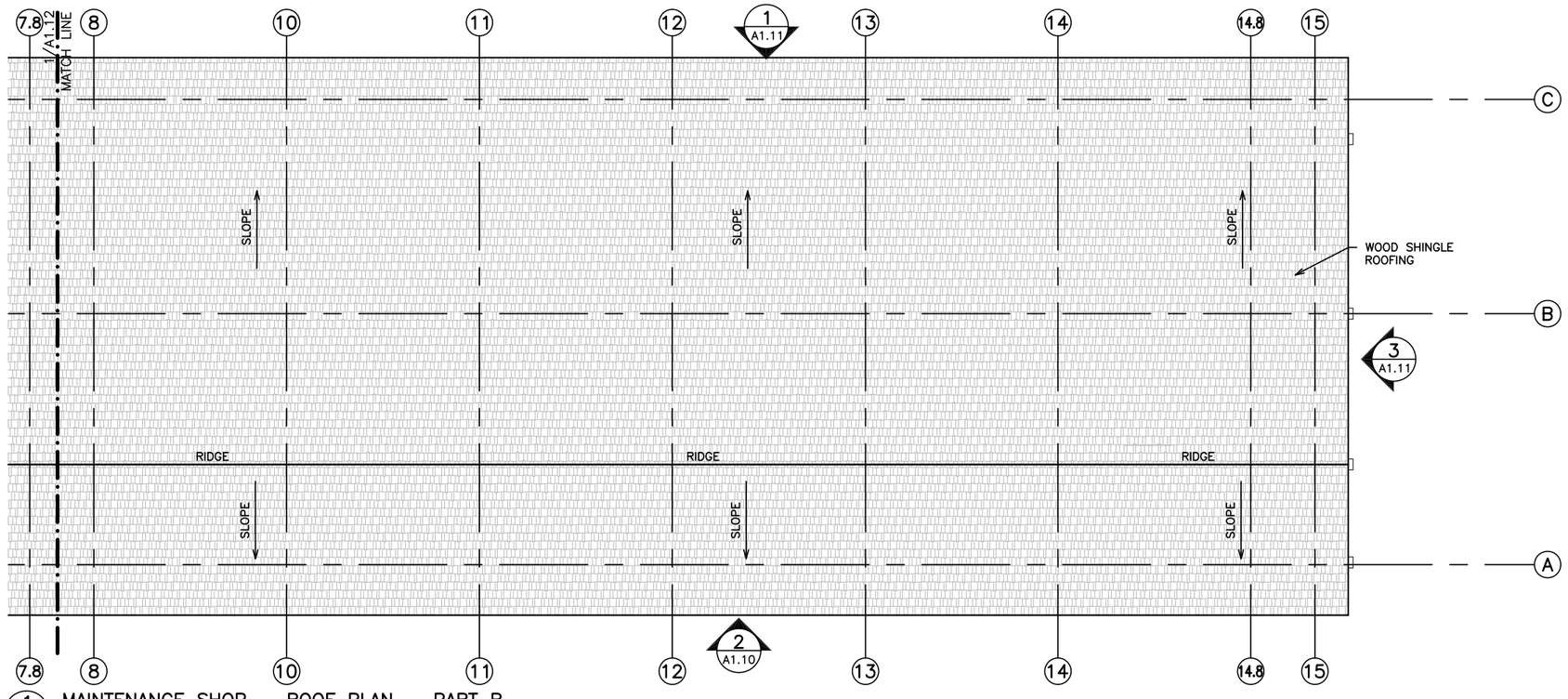
DESIGNED: DAM	SUB SHEET NO.	TITLE OF SHEET: MAINTENANCE SHOP ELEVATIONS	DRAWING NO. 317 127432
CADD DAM	A1.11		PMIS/PKG NO. 152851
TECH. REVIEW: NAA			SHEET 15 OF 23
DATE: 10/29/2015		SCOTTS BLUFF NATIONAL MONUMENT	

10/29/15 10:56 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\15 - A1-11-1981 MAINT - ELEVATIONS - SCOTTSBLUFF - COPY.DWG XREFS: ..\BASES\XA-SCOTTSBLUFF - ELEVATIONS.DWG;



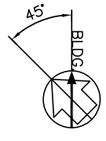
1 3 | 3 MAINTENANCE SHOP – ROOF PLAN – PART A

SCALE A



1 3 | 3 MAINTENANCE SHOP – ROOF PLAN – PART B

SCALE A

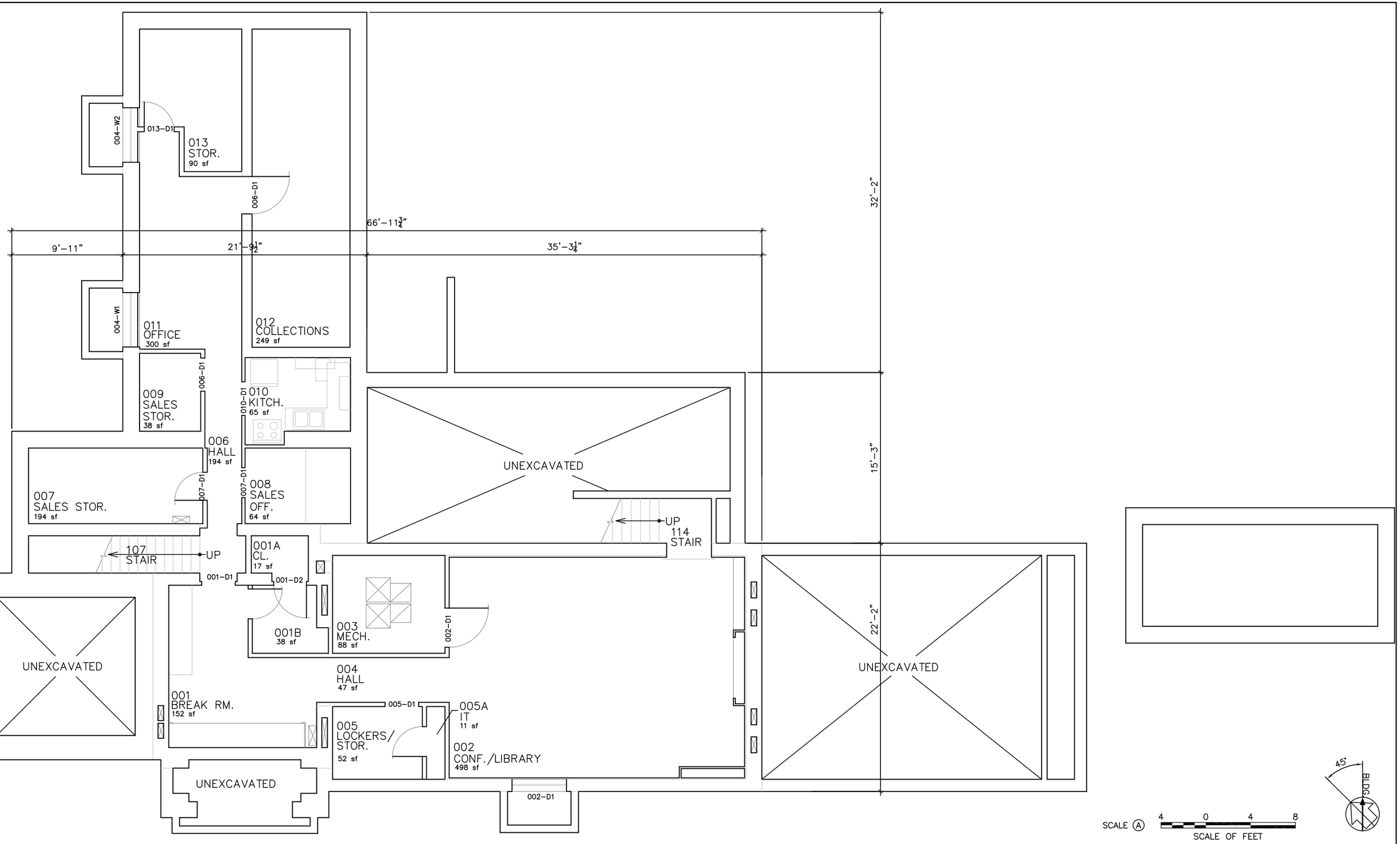


SCALE A 4 0 4 8

SCALE OF FEET

DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.12	TITLE OF SHEET MAINTEINANCE SHOP ROOF PLAN PART A & B SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 16 OF 23

10/29/15 10:58 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\16 - A1-12-1981 MAINT - ROOF PLAN-A - SCOTTSBLUFF.DWG XREFS: ..\BASES\XA-SCOTTSBLUFF - FLOOR PLANS.DWG;

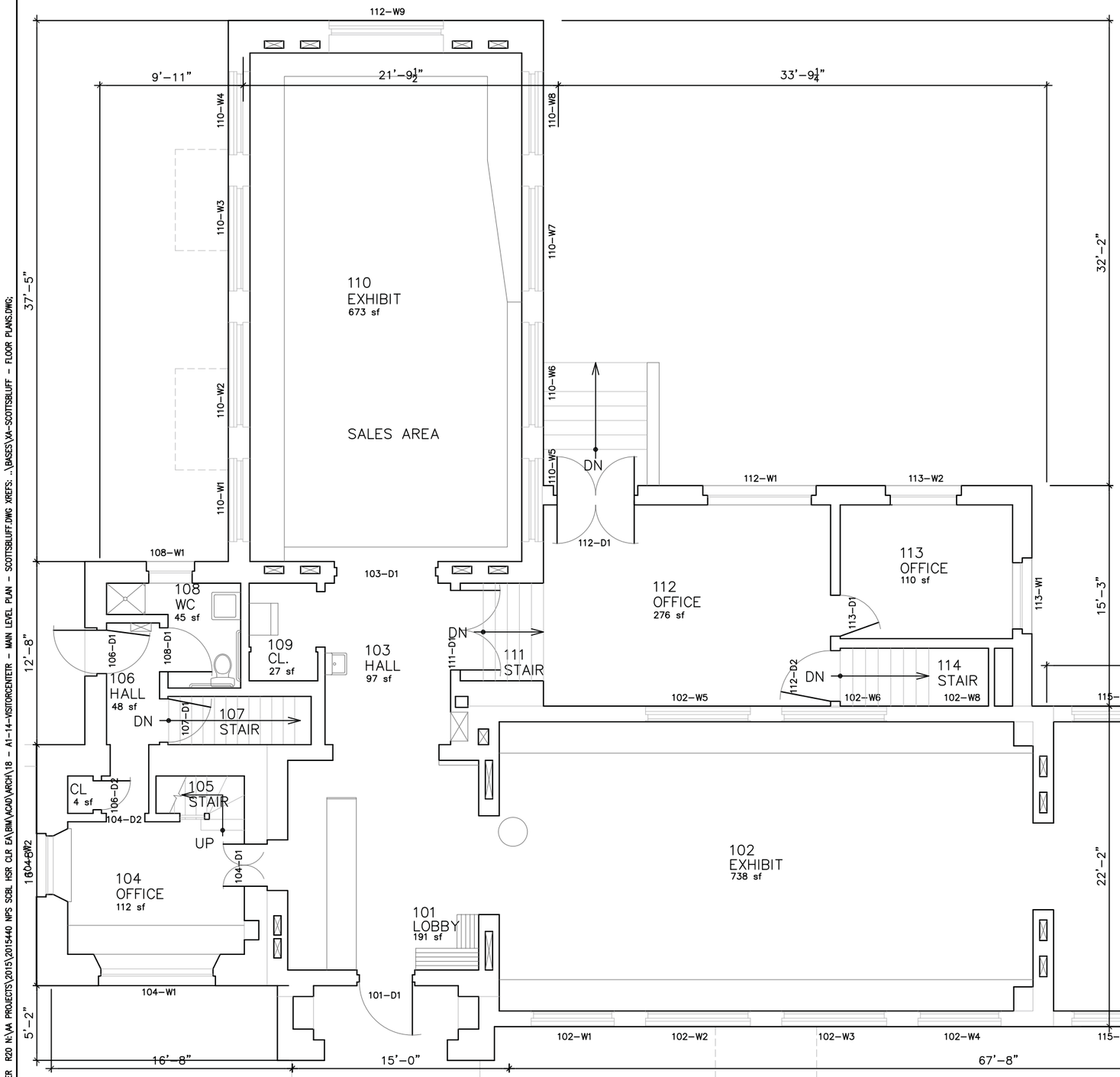


1 / A1.13 VISITOR CENTER – BASEMENT FLOOR PLAN

SCALE Ⓐ

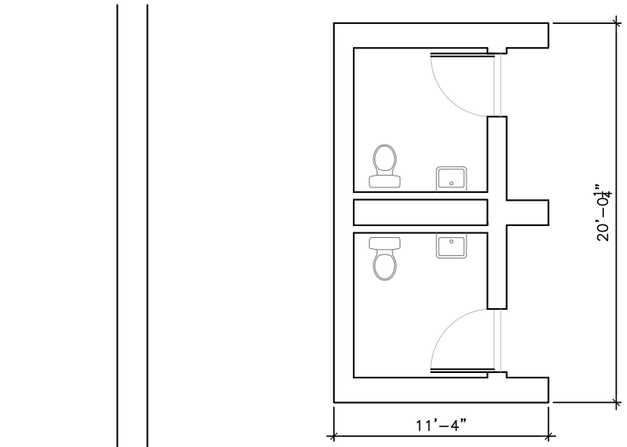
DESIGNED: DAM	SUB SHEET NO. A1.13	TITLE OF SHEET VISITOR CENTER BASEMENT FLOOR PLAN	DRAWING NO. 317 127432
CADD DAM			PMIS/PKG NO. 152851
TECH. REVIEW: NAA		SCOTTS BLUFF NATIONAL MONUMENT	SHEET 17 OF 23
DATE: 10/29/2015			

10/29/15 11:00 DAVIDMILLER R2D N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\17 – A1-13-VISITORCENTETR – BASEMENT FLOOR PLAN – SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF – FLOOR PLANS.DWG;



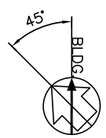
1 A1.14 VISITOR CENTER – MAIN LEVEL PLAN – PART A

SCALE Ⓐ



2 A1.14 VISITOR CENTER – MAIN LEVEL PLAN – PART B

SCALE Ⓐ



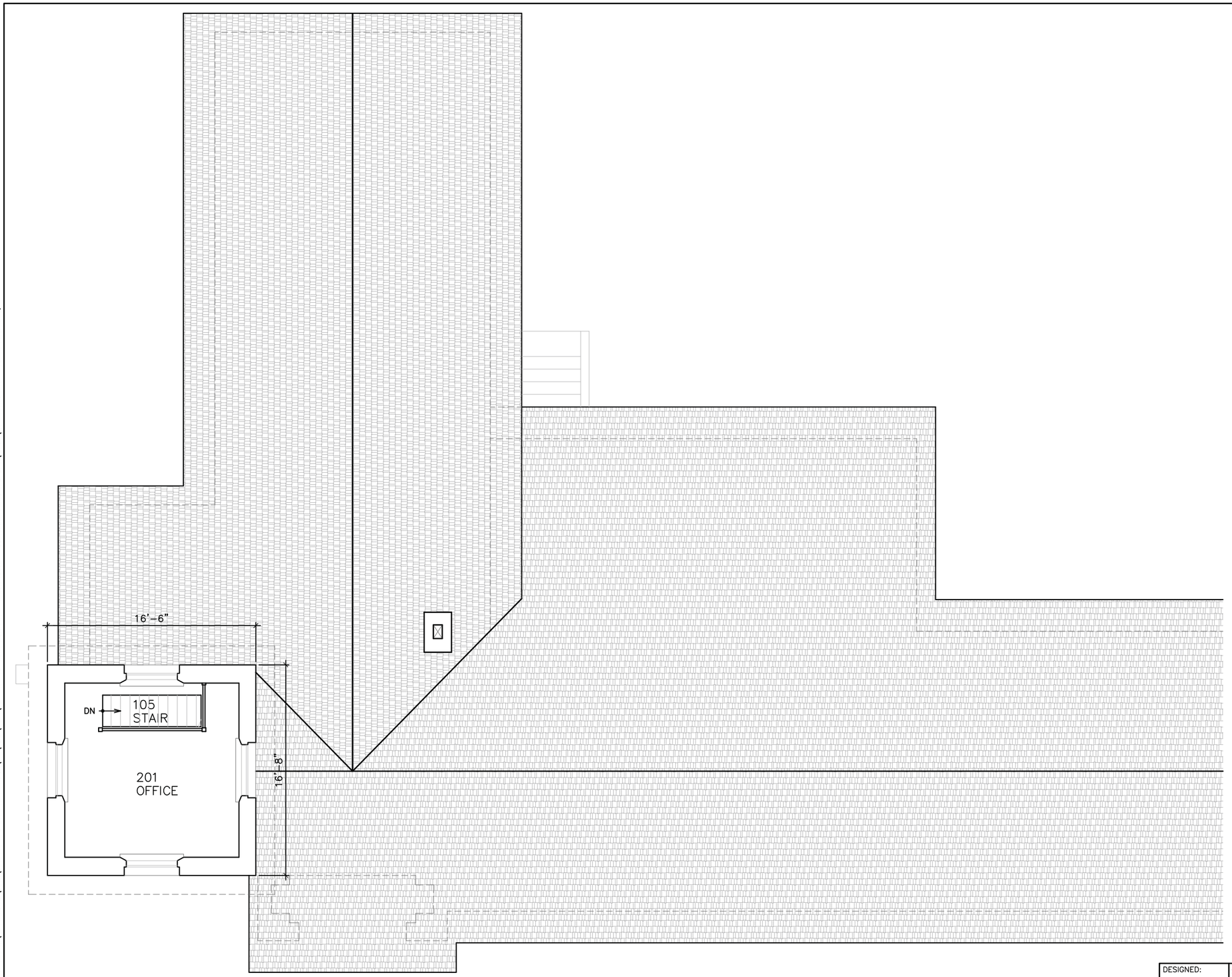
SCALE Ⓐ 4 0 4 8

SCALE OF FEET

~~DESIGNED:~~ DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.14	TITLE OF SHEET VISITOR CENTER MAIN LEVEL PLAN SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 18 OF 23

10/29/15 11:02 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\18 - A1-14-VISITORCENTER - MAIN LEVEL PLAN - SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF - FLOOR PLANS.DWG;

10/29/15 11:03 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\19 - A1-15-VISITORCENTETR - TOWER LEVEL - SCOTTSBLUFF.DWG XREFS: ..\BASES\AA-SCOTTSBLUFF - FLOOR PLANS.DWG;



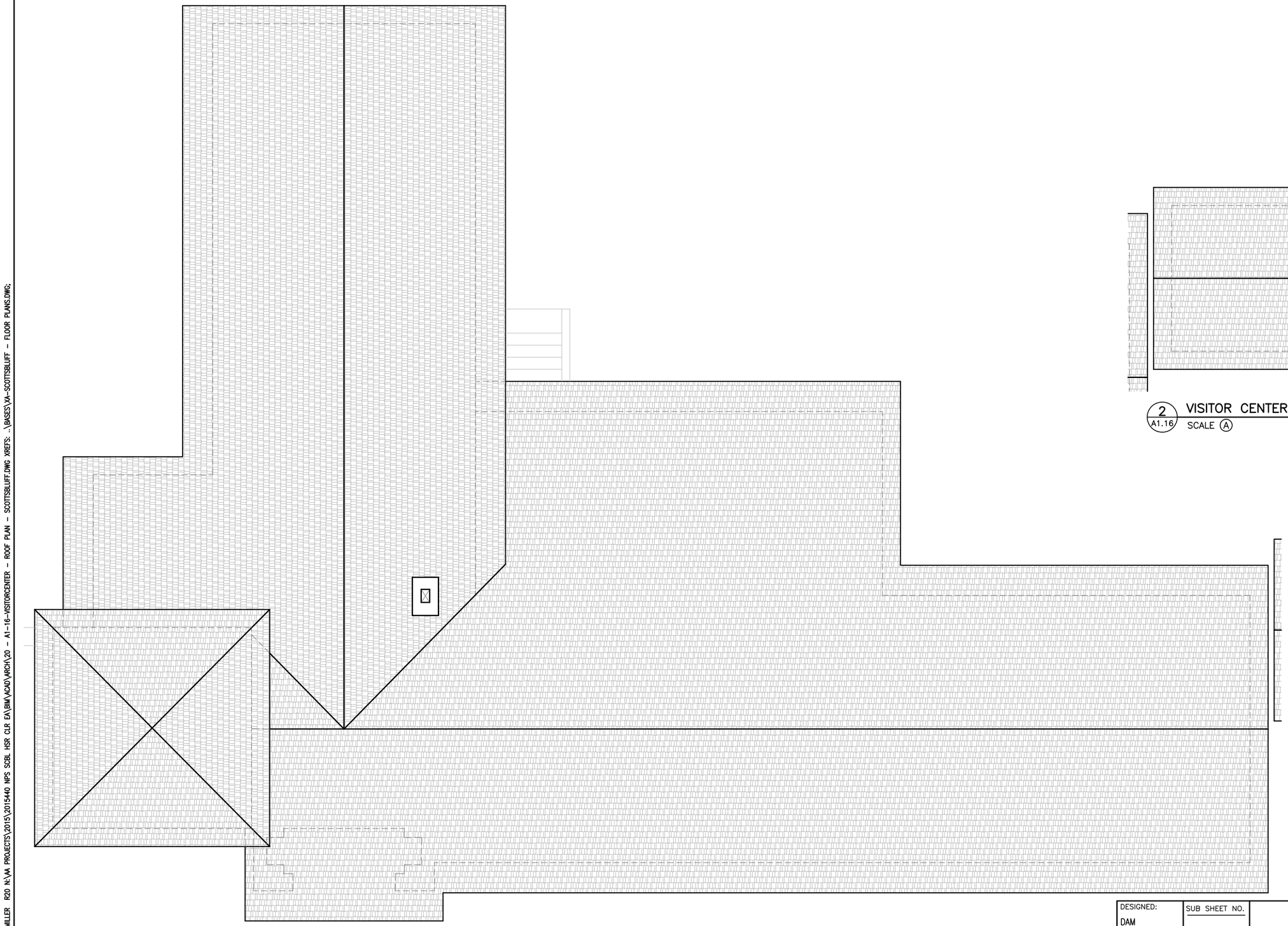
1 / A1.15 VISITOR CENTER – TOWER LEVEL PLAN
SCALE (A)

SCALE (A) 4 0 4 8
SCALE OF FEET

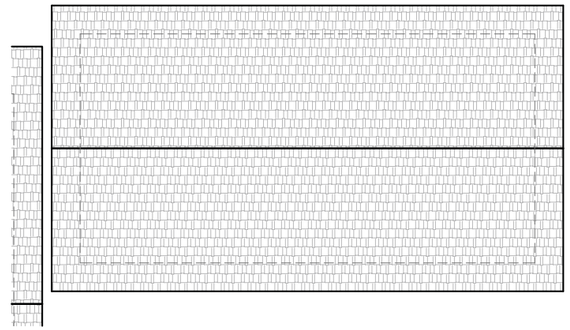
45°
BLDG

DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.15	TITLE OF SHEET VISITOR CENTER TOWER LEVEL FLOOR PLAN SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 19 OF 23

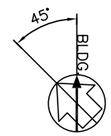
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1 A1.16 VISITOR CENTER – ROOF PLAN
SCALE A

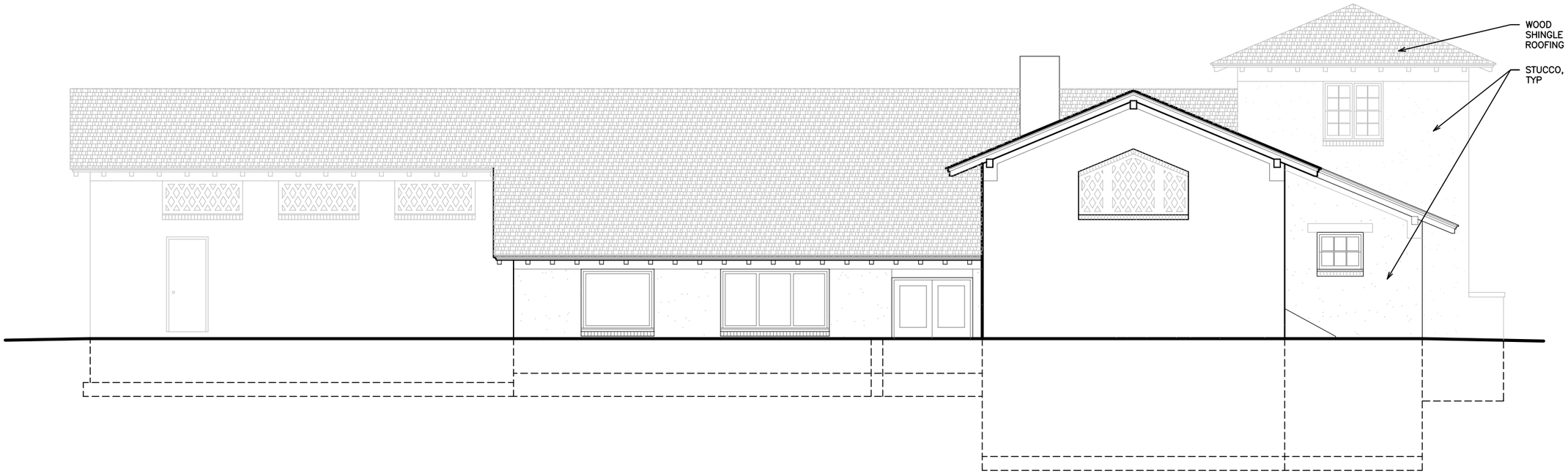


2 A1.16 VISITOR CENTER – ROOF PLAN
SCALE A

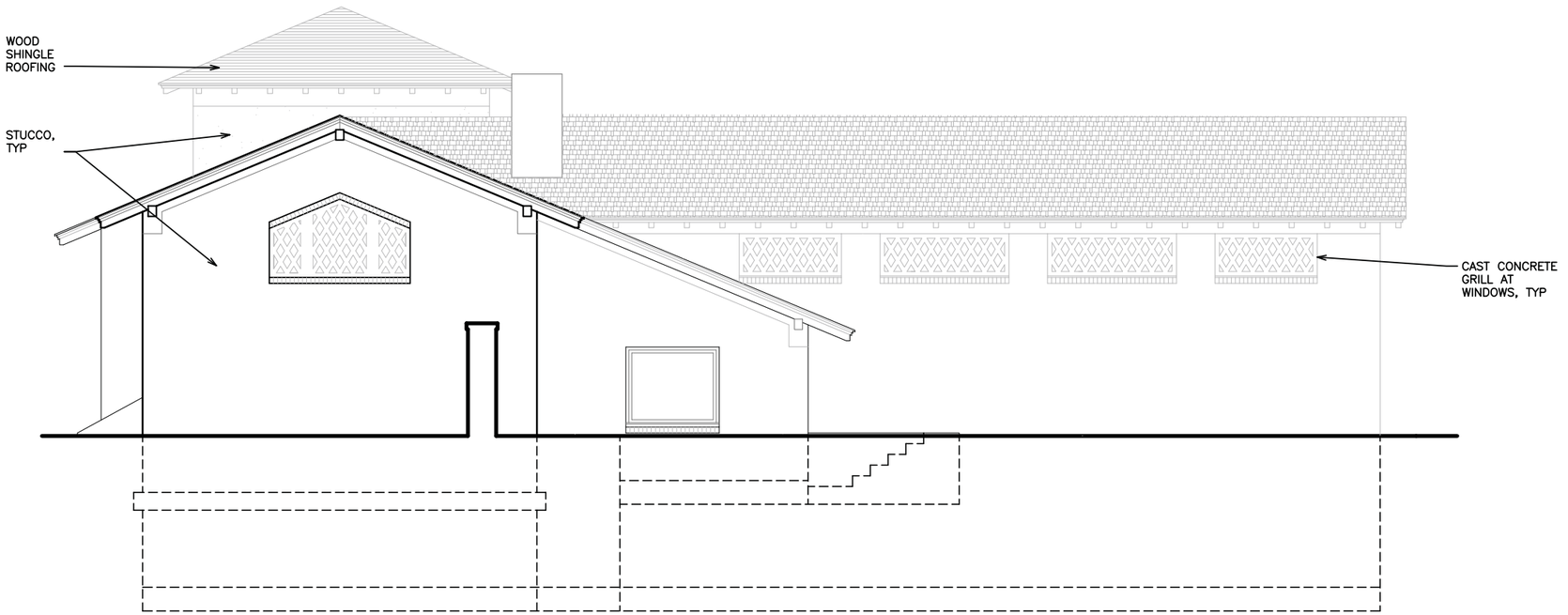


SCALE A 4 0 4 8
SCALE OF FEET

DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.16	TITLE OF SHEET VISITOR CENTER ROOF PLAN SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 20 OF 23



1 A1.17 VISITOR CENTER – NORTH ELEVATION
SCALE (A)

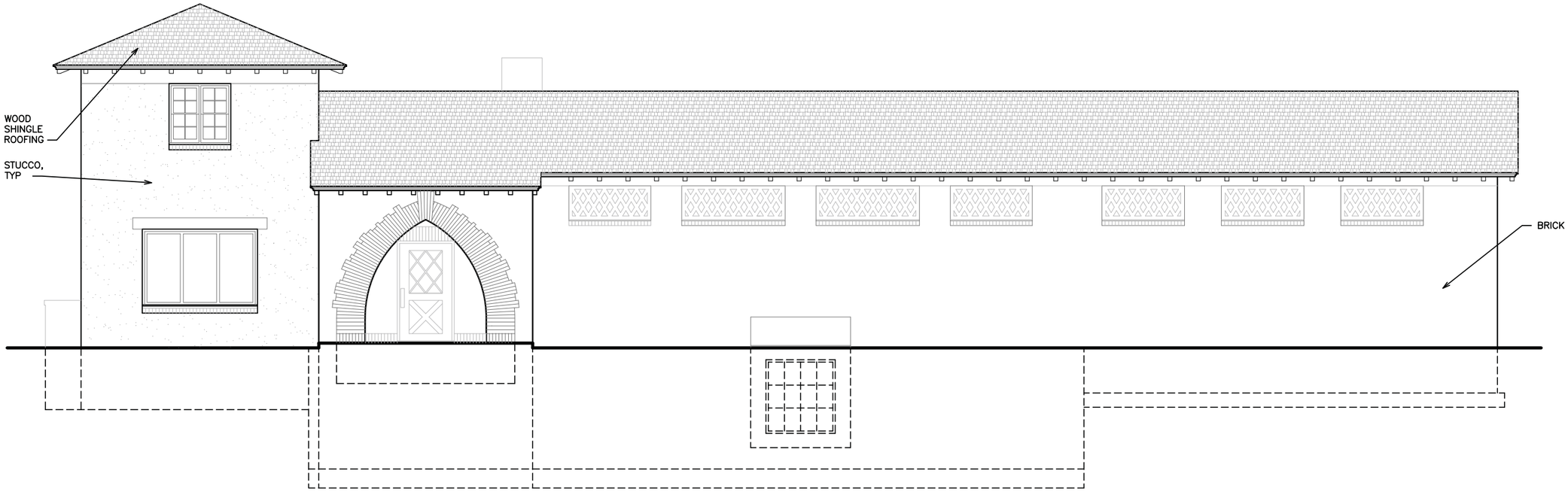


2 A1.17 VISITOR CENTER – EAST ELEVATION
SCALE (A)

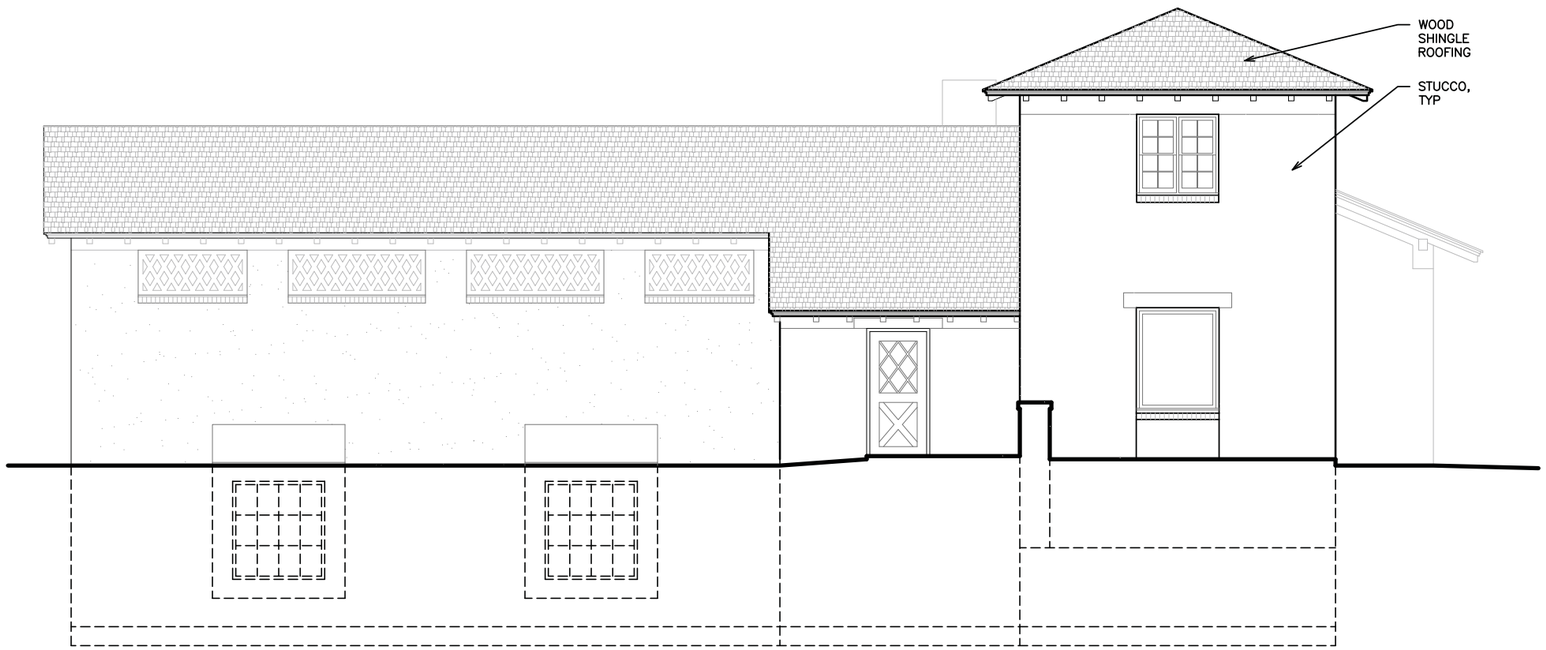
SCALE (A) 4 0 4 8
SCALE OF FEET

DESIGNED: DAM DRAWN: DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.17	TITLE OF SHEET VISITOR CENTER NORTH AND EAST ELEVATIONS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 21 OF 23

10/29/15 11:05 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\21 – A1-17-VISITORCENTER – NORTH AND EAST ELEVATIONS – SCOTTSBLUFF.DWG XREFS: ..\BASES\XA-SCOTTSBLUFF – ELEVATIONS.DWG;



1 A1.18 VISITOR CENTER – SOUTH ELEVATION
SCALE (A)

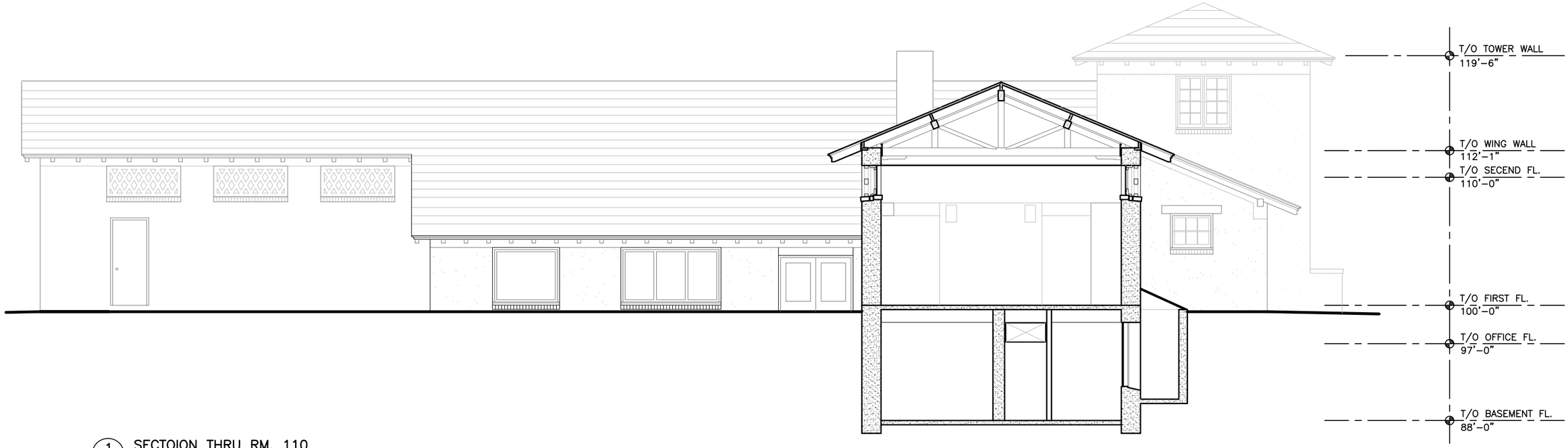


2 A1.18 VISITOR CENTER – WEST ELEVATION
SCALE (A)

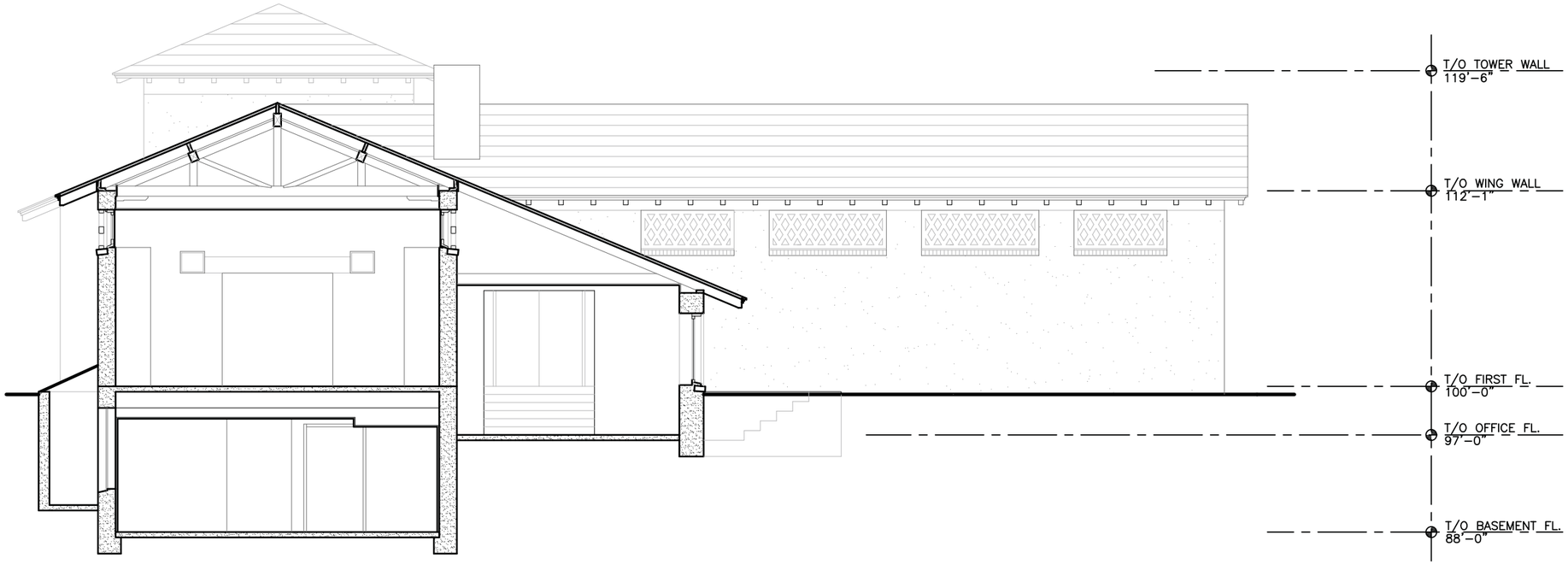
SCALE (A) 4 0 4 8
SCALE OF FEET

DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.18	TITLE OF SHEET VISITOR CENTER SOUTH AND WEST ELEVATIONS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 22 OF 23

10/29/15 11:06 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\22 – A1-18-VISITORCENTER – SOUTH AND WEST ELEVATIONS – SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF – ELEVATIONS.DWG;



1 / A1.19 SECTOION THRU RM. 110
SCALE (A)



SCALE (A) 4 0 4 8
SCALE OF FEET

2 / A1.19 SECTION THRU RM. 102
SCALE (A)

DESIGNED: DAM CADD DAM TECH. REVIEW: NAA DATE: 10/29/2015	SUB SHEET NO. A1.19	TITLE OF SHEET VISITOR CENTER SECTIONS ELEVATIONS SCOTTS BLUFF NATIONAL MONUMENT	DRAWING NO. 317 127432 PMIS/PKG NO. 152851 SHEET 23 OF 23

10/29/15 11:08 DAVIDMILLER R20 N:\AA PROJECTS\2015\2015440 NPS SCBL HSR CLR EA\BIM\ACAD\ARCH\23 - A1-19-VISITORCENTER - SOUTH AND WEST ELEVATIONS - SCOTTSBLUFF.DWG XREFS: ..\BASES\VA-SCOTTSBLUFF - SECTIONS.DWG;

Appendix B: Estimate of Probable Cost

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United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

BASIS OF ESTIMATE

PROJECT INFORMATION

Project:	Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop
Park:	Scotts Bluff National Monument
Park Alpha:	SCBL
PMIS Number:	152851
Estimate Date:	11/3/2016 - V 1.3
Prepared By:	Terence Walton
Company:	ACC Cost Consultants, LLC
Address:	8060 SW Pfaffle St., Suite 110
City, State Zip:	Tigard, Oregon 97223
Phone:	503-718-0075

BACKGROUND SUPPORTING MATERIAL (Scope of Work):

The scope of this project is to rehabilitate the existing Visitor Center, 1938 residence, 1958 residence, and Maintenance Shop. Update existing building systems, address code deficiencies, accommodate accessibility.

SOURCE OF COST DATA:

Source of cost data is based on ACC's work history along with ACC's database of past and current projects. The Means City Cost Index adjusts for location factor and pricing. Pricing involves contacting local suppliers and vendors for price checks. This estimate is formulated on the estimator's professional judgment and experience. This estimate makes no warranty, expressed or implied, that the quantities, bids or the negotiated cost of the work will not vary from the estimator's opinion of probable construction cost.

ESTIMATE ASSUMPTIONS:

Phasing and temporary equipment, facilities, etc. are not included. (This will be re-evaluated once a preferred scheme is selected). Pricing is an attempt to reflect the current demonstrated construction environment for the site location and current construction market.

MAJOR CHANGES FROM PREVIOUS ESTIMATE:

Describe any major changes in scope of work, materials, systems, assumptions, etc. from the previous estimate version.

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

BASIS OF ESTIMATE

PROJECT INFORMATION

Project: Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop

Park: Scotts Bluff National Monument
Park Alpha: SCBL
PMIS Number: 152851
Estimate Date: 11/3/2016 - V 1.3

DESCRIPTION OF MARK-UP & ADD-ONS:

Location Factor:	-15.60%	Basis of 2016 RS means = 100.0. Published Index Location, assume Cheyenne, Wy 86.5. Factor = 100.0/86.5 = -15.6%
Remoteness Factor:	9.60%	Site is 96 miles from published commercial center. Allow 1% per 10 miles - 96 / 10 = 9.6%
Wage Rate Factor:	0.00%	Not Required
State & Local Taxes:	7.00%	State (5.5%) Local (1.5%) Total 7.0%
Design Contingency:	30.00%	Preliminary Design (PD) documents consist of a Historic Structures Report and Treatment Report . Relatively simple scope but not completely defined, warrants a 30% contingency.
Standard. General Conditions:	15.00%	Typical range 10% to 20%
Government General Conditions:	5.00%	Typical range 5% to 10%
Historic Preservation Factor:	5.00%	Existing building has not been tested for the presence of hazardous material in or around the building.
Contractor Overhead:	8.00%	per NPS Region
Contractor Profit:	10.00%	per NPS Region
Bonds and Permits:	3.176%	Bonds 1.105%, Insurance 1.039% & Permits 1.032%
Contracting Method Adjustment:	10.00%	per NPS Region
Annual Inflation Escalation Factor:	2.80%	Projected annual inflation rate.
Time Until Project Midpoint (Months)	24	Allowance. TBD

OTHER COMMENTS:

This estimate is for direct construction cost only. It does not include furnishings & equipment, architect and engineer design fees, consultant fees, inspection and testing fees, plan check fees, hazardous material testing and removal, financing costs, nor any other normally associated development costs. This estimate assumes a sole-source general contractor. This is a probable cost estimate based on in-progress documentation provided by the architect. The actual bid documents will vary from this estimate due to document completion, detailing, specification, addendum, etc. The estimator has no control over the cost or availability of labor, equipment, materials, over market conditions or contractor's method of pricing, contractor's construction logistics and scheduling.

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

PROJECT COST SUMMARY

Project: Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop
Park: Scotts Bluff National Monument
Alpha: SCBL
PMIS: 152851

Estimate By: Terence Walton
Date: 11/3/2016 - V 1.3

Reviewed By: SJP
Date: 08/10/16

Item No.	Description	Quantity	Unit	Cost/Unit	Total
1	Visitor Center Rehabilitation	1	Unit	$559,127	$559,127
2	1938 Residence Rehabilitation	1	Unit	$115,905	$115,905
3	1958 Residence Rehabilitation	1	Unit	$172,730	$172,730
4	Maintenance Shop Rehabilitation	1	Unit	$319,466	$319,466
5	Asset / Project Element 5	-	Unit	#DIV/0!	$0
6	Asset / Project Element 6	-	Unit	#DIV/0!	$0
7	Asset / Project Element 7	-	Unit	#DIV/0!	$0
8	Asset / Project Element 8	-	Unit	#DIV/0!	$0
9	Asset / Project Element 9	-	Unit	#DIV/0!	$0
10	Asset / Project Element 10	-	Unit	#DIV/0!	$0
11	Asset / Project Element 11	-	Unit	#DIV/0!	$0
12	Asset / Project Element 12	-	Unit	#DIV/0!	$0
	Subtotal Direct Construction Costs				**$1,167,228**
	Value of Government Furnished Property (GFP) Included in Direct Cost (see footnote)*				**$0**
				Direct Cost Subtotal without GFP	**$1,167,228**
	Published Location Factor	-15.60%			-$182,088
	Remoteness Factor	9.60%			$112,054
	Federal Wage Rate Factor	0.00%			$0
	State & Local Taxes	7.00%			$81,706
	Design Contingency	30.00%			$350,168
	Total Direct Construction Costs				**$1,529,069**
	Standard General Conditions	15.00%			$229,360
	Government General Conditions	5.00%			$76,453
	Historic Preservation Factor	5.00%			$76,453
	Subtotal NET Construction Cost				**$1,911,336**
	Overhead	8.00%			$152,907
	Profit	10.00%			$191,134
	Estimated NET Construction Cost				**$2,255,376**
	Bonds & Permits	3.18%			**$71,631**
	Contracting Method Adjustment	10.00%			$225,538
	Inflation Escalation	24	Months	2.80%	$144,944
	Total Estimated NET Cost of Construction				**$2,697,489**

* GFP costs are only used when the Government pre-purchases items, or provides other materials out of Government inventory, to be installed by contractor. Adjustments and Markup on GFP only include Inflation Escalation; No other adjustment factors or O&P markup have been applied.

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16
Summary Item 1	**Visitor Center Rehabilitation**	**Total Cost:**	$559,127

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B10	**SUPERSTRUCTURE**					
Level 3 Code	remove 4x4 purlin at lobby	14.5	lf	$ 12.50	$181	
Level 3 Code	temp shoring	1	sum	$ 250.00	$250	
Level 3 Code	new lvl purlin set on stud packs on existing masonry walls	14.5	lf	$ 78.00	$1,131	
Level 3 Code	framing clips & shims at rafters in Lobby	1	sum	$ 1,500.00	$1,500	allowance
Level 3 Code	tighten steel rods in heavy timber trusses in exhibit areas + wood epoxy infill at gaps	6	ea	$ 1,000.00	$6,000	allowance
Level 3 Code	allowance to ensure ridge beam is fully seated	1	sum	$ 800.00	$800	allowance
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SUPESTRUCTURE	**1**	**VALUE**	**$ 9,862.25**	**$9,862**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B20	**EXTERIOR CLOSURE**					
Level 3 Code	strip paint from brick	935	sf	$ 1.00	$935	
Level 3 Code	repaint brick	935	sf	$ 1.00	$935	
Level 3 Code	remove loose paint from stucco	2650	sf	$ 0.15	$398	
Level 3 Code	repaint stucco siding	2650	sf	$ 1.00	$2,650	
Level 3 Code	remove tower windows	123.6	sf	$ 7.00	$865	
Level 3 Code	new divided light upper windows - tower	57	sf	$ 100.00	$5,700	
Level 3 Code	new fixed lower windows - tower	66.6	sf	$ 100.00	$6,660	
Level 3 Code	remove plywood infill at exhibit windows	328	sf	$ 1.00	$328	
Level 3 Code	remove old glazing at exhibit windows	328	sf	$ 2.00	$656	
Level 3 Code	install glazing w/ UV film at exhibit windows	328	sf	$ 40.00	$13,120	
Level 3 Code	clean/repair wood window frames - allowance	328	sf	$ 5.00	$1,640	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item 1 **Visitor Center Rehabilitation** **Total Cost:** $559,127

Level 3 Code	repair cracks in brick (repoint as required)	935	sf	$ 2.00	$1,870	allowance define extent
Level 3 Code	repair cracks in stucco as required	2650	sf	$ 1.50	$3,975	allowance define extent
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL EXTERIOR CLOSURE		**1**	**VALUE**	**$ 39,731.70**	**$39,732**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B30	**ROOFING**					
Level 3 Code	clean & prep roof shingles	5860	sf	$ 0.30	$1,758	
Level 3 Code	apply dark stain to top of wood shingles	5860	sf	$ 0.80	$4,688	slope 5:12
Level 3 Code	seal any gaps in step flashing	17.5	lf	$ 12.00	$210	allowance
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL ROOFING		**1**	**VALUE**	**$ 6,656.00**	**$6,656**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C30	**INTERIOR FINISHES**					
Level 3 Code	repair cracks in ceiling - tower 2nd floor	190	sf	$ 3.00	$570	allowance, verify act clg
Level 3 Code	paint ceiling - tower 2nd floor	190	sf	$ 1.00	$190	
Level 3 Code	remove carpet flooring	2000	sf	$ 0.75	$1,500	verify area
Level 3 Code	clean/ restore (seal) scored concrete floor	2000	sf	$ 10.00	$20,000	
Level 3 Code	new gypboard ceiling, Jackson Rm	600	sf	$ 6.00	$3,600	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL INTERIOR FINISHES		**1**	**VALUE**	**$ 25,860.00**	**$25,860**	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item 1 **Visitor Center Rehabilitation** **Total Cost:** $559,127

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D20	**PLUMBING**					
Level 3 Code	Demolition					
Level 3 Code	Demo Plumbing Fixtures	15	Ea	$ 264.00	$3,960	
Level 3 Code	Demo water, waste, and vent lines	1190	Lf	$ 4.62	$5,498	
Level 3 Code	Waste Drainage Systems					
Level 3 Code	C.I. Waste & Vent AG 2"	200	Lf	$ 28.71	$5,742	
Level 3 Code	C.I. Waste & Vent AG 3"	100	Lf	$ 36.19	$3,619	
Level 3 Code	C.I. Waste & Vent AG 4"	50	Lf	$ 50.82	$2,541	
Level 3 Code	Domestic Hot & Cold Water					
Level 3 Code	L-Cu Dist. Piping 1/2"	320	Lf	$ 17.53	$5,611	
Level 3 Code	L-Cu Dist. Piping 3/4"	130	Lf	$ 21.88	$2,845	
Level 3 Code	L-Cu Dist. Piping 1"	180	Lf	$ 26.06	$4,691	
Level 3 Code	L-Cu Dist. Piping 1-1/4"-1-1/2"	210	Lf	$ 32.07	$6,734	
Level 3 Code	rpba -1) 2-1/2" backflow preventer & assoc piping	1	ea	$ 2,110.00	$2,110	
Level 3 Code	Piping Insulation					
Level 3 Code	Piping Insulation - Domestic H&C	840	Lf	$ 17.60	$14,784	
Level 3 Code	Plmbg Fixtures/Commercial					
Level 3 Code	WC-1) Wall Hung flush valve Water Closet w/sensors	8	Ea	$ 1,232.00	$9,856	
Level 3 Code	L-1) Lavatory W/H with sensor	5	Ea	$ 1,193.50	$5,968	
Level 3 Code	SHR-1) Stall fiberglass shower complete	1	Ea	$ 3,058.00	$3,058	
Level 3 Code	UR-1) Urinal - Wall Hung	1	Ea	$ 1,387.10	$1,387	
Level 3 Code	Plumbing Equipment					
Level 3 Code	SP-1) F&I new storm sump and basin / assoc. piping	2	Ea	$ 9,515.00	$19,030	
Level 3 Code	SP-2) F&I new sanitary sump and basin / assoc. piping	1	Ea	$ 12,650.00	$12,650	
Level 3 Code	EW1) Electric Water Heaters - 120 gall	2	Ea	$ 1,243.00	$2,486	
Level 3 Code	DET-101) 53 gallon expansion tank	2	Ea	$ 822.80	$1,646	
Level 3 Code	Rigging	1	Sum	$ 302.50	$303	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL PLUMBING	**1**	**VALUE**	**$ 114,516.86**	**$114,517**	

United States Department of the Interior
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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16
Summary Item 1	**Visitor Center Rehabilitation**	**Total Cost:**	$559,127

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D30	**HVAC**					
Level 3 Code	HVAC Equipment					
Level 3 Code	All new VRF mechanical system complete	1	ls	$ 182,215.00	$182,215	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL HVAC	**1**	**VALUE**	**$ 182,215.00**	**$182,215**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D40	**Fire Protection**					
Level 3 Code	sprinkler entire building	6290	gsf	$ 6.00	$37,740	excludes RR bldgs
Level 3 Code	allowance for new water service line	1	sum	$ 20,000.00	$20,000	from Old Oregon Trail Rd
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FIRE PROTECTION	**1**	**VALUE**	**$ 57,740.00**	**$57,740**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D50	**ELECTRICAL**					
Level 3 Code	New Electrical Panel/Grounding	1	Sum	$ 4,932.00	$4,932	
Level 3 Code	New Feeder	150	Lf	$ 59.94	$8,991	
Level 3 Code	Connections-New Mechanical Equipment	1	Sum	$ 9,316.00	$9,316	
Level 3 Code	Re-Feed Existing Panels	2	Ea	$ 2,301.60	$4,603	
Level 3 Code	Install New Branch Circuiting	1	Sum	$ 16,166.00	$16,166	
Level 3 Code	Sump Pump Connection	1	Ea	$ 438.40	$438	
Level 3 Code	Install New Lighting Fixtures	24	Ea	$ 280.85	$6,740	
Level 3 Code	Install Occupancy Sensors	18	Ea	$ 212.35	$3,822	

United States Department of the Interior
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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item 1 **Visitor Center Rehabilitation** — **Total Cost:** $559,127

Level 3 Code	Check Existing Exit/Em Lighting	1	Sum	$ 150.70	$151	
Level 3 Code	Install EM Fixtures	10	Ea	$ 465.80	$4,658	
Level 3 Code	Conduit	1	Sum	$ 8,083.00	$8,083	
Level 3 Code	Install New FA Panel/Programming	1	Sum	$ 13,535.60	$13,536	
Level 3 Code	Install Fire Alarm Notification Devices	17	Ea	$ 390.45	$6,638	
Level 3 Code	Install Smoke Detectors	30	Ea	$ -	$0	NIC - sprinklers, verify
Level 3 Code	Install Door Contacts-Security	7	Ea	$ 325.38	$2,278	
Level 3 Code	Install Security Motion Sensors	10	Ea	$ 359.63	$3,596	
Level 3 Code	Install Lightning Protection	1	Sum	$ 13,700.00	$13,700	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL ELECTRICAL		**1**	**VALUE**	**$ 107,647.75**	**$107,648**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F20	**SELECTIVE BUILDING DEMOLITION**					
Level 3 Code	Remove Popcorn Ceiling, Jackson Rm	600	sf	$ 20.00	$12,000	per hazmat survey
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SELECTIVE BUILDING DEMOLITION		**1**	**VALUE**	**$ 12,000.00**	**$12,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G20	**SITE IMPROVEMENTS**					
Level 3 Code	create expansion joints in retaining wall at amphitheater	3	ea	$ 315.00	$945	
Level 3 Code	recoat retaining wall + paint	59.5	sf	$ 16.00	$952	
Level 3 Code	repair landscaping at new fire line	1	sum	$ 1,000.00	$1,000	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SITE IMPROVEMENTS		**1**	**VALUE**	**$ 2,897.00**	**$2,897**	

United States Department of the Interior
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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16
Summary Item 1	**Visitor Center Rehabilitation**	**Total Cost:**	$559,127

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST · Visitor Center Rehabilitation		**1**	**VALUE**	**$ 559,126.56**	**$559,127**	

United States Department of the Interior
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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16
Summary Item 2	**1938 Residence Rehabilitation**	**Total Cost:**	$115,905

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B10	**SUPERSTRUCTURE**					
Level 3 Code	strengthen rafters at intersection of roofs	1	sum	$ 1,000.00	$1,000	allowance
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SUPESTRUCTURE		**1**	**VALUE**	**$ 1,000.00**	**$1,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B20	**EXTERIOR CLOSURE**					
Level 3 Code	repair stucco at chimneys, as required	3	ea	$ 500.00	$1,500	allowance
Level 3 Code	repair cracks in stucco siding	1195	sf	$ 1.50	$1,793	allowance
Level 3 Code	patch stucco siding, few areas (assume 5% area)	59.75	sf	$ 20.00	$1,195	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL EXTERIOR CLOSURE		**1**	**VALUE**	**$ 4,487.50**	**$4,488**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B30	**ROOFING**					
Level 3 Code	new wood shingle roofing, dark reddish stain	1698	sf	$ 8.50	$14,433	pre-dipped in stain
Level 3 Code	felt paper / underlayment	1868	sf	$ 0.35	$654	
Level 3 Code	wood shingle ridge cap	77	lf	$ 10.00	$770	
Level 3 Code	metal drip edge flashing	212	lf	$ 8.50	$1,802	
Level 3 Code	metal flashing at chimneys	38	lf	$ 15.00	$570	
Level 3 Code	metal valley flashing	62	lf	$ 25.00	$1,550	
Level 3 Code	new gutters, assume 25%	29.5	lf	$ 15.00	$443	
Level 3 Code	prep/paint gutters	118	lf	$ 5.00	$590	

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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item 2 **1938 Residence Rehabilitation** **Total Cost:** $115,905

Level 3 Code	prep/paint downspouts	64	lf	$ 5.00	$320	
Level 3 Code	install cricket at chimney	2	ea	$ 300.00	$600	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL ROOFING		**1**	**VALUE**	**$ 21,731.30**	**$21,731**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C10	**INTERIOR CONSTRUCTION**					
Level 3 Code	replace damaged sub-flooring at Supply Rm 110	1	sum	$ 100.00	$100	allowance
Level 3 Code	clean or replace rusty chimney cleanout	1	sum	$ 500.00	$500	allowance
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL INTERIOR CONSTRUCTION		**1**	**VALUE**	**$ 600.00**	**$600**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C30	**INTERIOR FINISHES**					
Level 3 Code	clean/prep floor	515	sf	$ 1.00	$515	
Level 3 Code	carpet	63	sy	$ 32.00	$2,016	
Level 3 Code	clean/prep floor	32	sf	$ 1.25	$40	
Level 3 Code	tile flooring	32	sf	$ 25.00	$800	
Level 3 Code	repair crack at door header and ceiling	1	ea	$ 150.00	$150	
Level 3 Code	repair cracks in ceilings	510	sf	$ 2.00	$1,020	allowance
Level 3 Code	repair joints in gypbd ceiling	110	sf	$ 2.50	$275	
Level 3 Code	patch nail holes in walls & damaged panel (east wall)	1	sum	$ 500.00	$500	Office 103
Level 3 Code	repair wood panel walls	216	sf	$ 3.50	$756	allowance
Level 3 Code	repaint interior walls	1376	sf	$ 1.00	$1,376	
Level 3 Code	repaint ceilings	510	sf	$ 1.00	$510	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL INTERIOR FINISHES		**1**	**VALUE**	**$ 7,958.00**	**$7,958**	

United States Department of the Interior
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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
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PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item 2 **1938 Residence Rehabilitation** **Total Cost:** $115,905

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D20	**PLUMBING**					
Level 3 Code	RPBA-1) 3/4" Backflow preventer and assoc. piping	1	Sum	$ 1,160.00	$1,160	
Level 3 Code	Piping Insulation - Domestic H&C	10	Lf	$ 16.00	$160	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL PLUMBING	**1**	**VALUE**	**$ 1,320.00**	**$1,320**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D30	**HVAC**					
Level 3 Code	Sup/Ret/Gen. Exh. Duct					
Level 3 Code	Galvanized Rectangular and spiral Duct OSA	612	Lb	$ 8.80	$5,386	
Level 3 Code	Galvanized Rectangular and spiral Duct R/A / EXH	231	Lb	$ 8.80	$2,033	
Level 3 Code	Galvanized Rectangular and spiral Duct	550	Lb	$ 8.80	$4,840	
Level 3 Code	Air Distribution Devices					
Level 3 Code	R/A Grills	3	Ea	$ 82.50	$248	
Level 3 Code	Air & Water Balancing					
Level 3 Code	Air & Water Balancing	1	Sum	$ 616.00	$616	
Level 3 Code	Demo / Remove Ductwork	550	Lb	$ 1.25	$688	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL HVAC	**1**	**VALUE**	**$ 13,809.40**	**$13,809**	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

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Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item 2 **1938 Residence Rehabilitation** **Total Cost:** $115,905

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D40	**Fire Protection**					
Level 3 Code	sprinkler entire building	1279	gsf	$ 6.00	$7,674	
Level 3 Code	allowance for new water service line	1	sum	$ 10,250.00	$10,250	extend from VC
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FIRE PROTECTION	**1**	**VALUE**	**$ 17,924.00**	**$17,924**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D50	**ELECTRICAL**					
Level 3 Code	New Electrical Panel/Grounding	1	Sum	$ 2,397.50	$2,398	
Level 3 Code	New Feeder	100	Lf	$ 42.47	$4,247	
Level 3 Code	Check Electrical Circuiting	1	Sum	$ 301.40	$301	
Level 3 Code	New Duplex Outlet	4	Ea	$ 219.20	$877	
Level 3 Code	Install LED Lamps	10	Ea	$ 31.85	$319	
Level 3 Code	Install New Lighting Fixtures	6	Ea	$ 280.85	$1,685	
Level 3 Code	Install Occupancy Sensors	8	Ea	$ 212.35	$1,699	
Level 3 Code	Install Exit Signs	3	Ea	$ 397.30	$1,192	
Level 3 Code	Install EM Fixtures	3	Ea	$ 465.80	$1,397	
Level 3 Code	Conduit	1	Sum	$ 3,397.60	$3,398	
Level 3 Code	Install Fire Alarm Notification Devices	5	Ea	$ 390.45	$1,952	
Level 3 Code	Install Smoke Detectors	9	Ea	$ -	$0	NIC - sprinklers, verify
Level 3 Code	Tie FA Devices to Main FACP	1	Sum	$ 2,904.40	$2,904	
Level 3 Code	Install Door Contacts-Security	2	Ea	$ 325.38	$651	
Level 3 Code	Install Security Motion Sensors	6	Ea	$ 359.63	$2,158	
Level 3 Code	Install Lightning Protection	1	Sum	$ 7,535.00	$7,535	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL ELECTRICAL	**1**	**VALUE**	**$ 32,712.18**	**$32,712**	

United States Department of the Interior
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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16
Summary Item 2	**1938 Residence Rehabilitation**	**Total Cost:**	$115,905

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F20	**SELECTIVE BUILDING DEMOLITION**					
Level 3 Code	remove wood shingle roofing	1698	sf	$ 1.75	$2,972	
Level 3 Code	remove rusting/damaged gutters, assume 25%	29.5	lf	$ 2.00	$59	
Level 3 Code	remove carpet flooring	515	sf	$ 1.00	$515	
Level 3 Code	remove tile flooring	32	sf	$ 1.50	$48	
Level 3 Code	Haul & Disposal	1	sum	$ 359.00	$359	
Level 3 Code	Remove Air Cell Pipe Insulation Debris	100	lf	$ 35.00	$3,500	
Level 3 Code	Remove HVAC Dust Seam Paper	400	lf	$ 12.00	$4,800	
Level 3 Code	Remove Sheet Vinyl	30	sf	$ 12.00	$360	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SELECTIVE BUILDING DEMOLITION		**1**	**VALUE**	**$ 12,612.50**	**$12,613**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
G20	**SITE IMPROVEMENTS**					
Level 3 Code	repair landscaping at new fire line	1	sum	$ 1,750.00	$1,750	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL SITE IMPROVEMENTS		**1**	**VALUE**	**$ 1,750.00**	**$1,750**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST - 1938 Residence Rehabilitation		**1**	**VALUE**	**$ 115,904.88**	**$115,905**	

United States Department of the Interior
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LINE ITEM COST SUMMARY

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Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16
Summary Item	**1958 Residence Rehabilitation**	**Total Cost:**	$172,730

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
A10	**FOUNDATIONS**					
Level 3 Code	repair foundation leak - allowance	1	sum	$ 5,000.00	$5,000	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FOUNDATIONS	**1**	**VALUE**	**$ 5,000.00**	**$5,000**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B10	**SUPERSTRUCTURE**					
Level 3 Code	pack gap between framing and chimney	1	sum	$ 500.00	$500	allowance
Level 3 Code	roof beam intersection joist, blkg, stiffening - allowance	1	sum	$ 1,500.00	$1,500	allowance
Level 3 Code	metal straps at top plate of cripple walls	1	sum	$ 900.00	$900	allowance
Level 3 Code	plywood sheathing at cripple walls + blkg	1	sum	$ 1,000.00	$1,000	allowance
Level 3 Code	allowance to verify nailing in gypbd	1	sum	$ 1,000.00	$1,000	allowance
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SUPESTRUCTURE	**1**	**VALUE**	**$ 4,900.00**	**$4,900**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B20	**EXTERIOR CLOSURE**					
Level 3 Code	plywood soffit, painted	77	sf	$ 4.00	$308	
Level 3 Code	prep/paint exterior wood slat attic vent	2	ea	$ 75.00	$150	
Level 3 Code	repair cracked (window #103) trim	1	sum	$ 50.00	$50	
Level 3 Code	reseal glazing at center window #110	20	lf	$ 17.00	$340	
Level 3 Code	replace screens at window #110	21	sf	$ 6.00	$126	

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LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
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Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item **1958 Residence Rehabilitation** **Total Cost:** $172,730

Level 3 Code	prep/paint screen door #101	1	ea	$ 150.00	$150	
Level 3 Code	replace screen door #102	1	ea	$ 450.00	$450	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL EXTERIOR CLOSURE		**1**	**VALUE**	**$ 1,574.00**	**$1,574**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B30	**ROOFING**					
Level 3 Code	new wood shingle roofing, dark reddish stain	1995	sf	$ 8.50	$16,958	pre-dipped in stain
Level 3 Code	felt paper / underlayment	2195	sf	$ 0.35	$768	
Level 3 Code	wood shingle ridge cap	80	lf	$ 10.00	$800	
Level 3 Code	metal drip edge flashing	205	lf	$ 8.50	$1,743	
Level 3 Code	metal flashing at chimneys	8	lf	$ 15.00	$120	
Level 3 Code	metal valley flashing	26	lf	$ 25.00	$650	
Level 3 Code	new gutters, assume 25%	31	lf	$ 15.00	$465	
Level 3 Code	prep/paint gutters	124	lf	$ 5.00	$620	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL ROOFING		**1**	**VALUE**	**$ 22,123.25**	**$22,123**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C30	**INTERIOR FINISHES**					
Level 3 Code	clean & regrout tile flooring in Living Room 101	53	sf	$ 10.00	$530	
Level 3 Code	remove/reinstall wood burning stove	1	sum	$ 250.00	$250	
Level 3 Code	refinish parquet wood flooring in Living Room 101	263	sf	$ 5.00	$1,315	
Level 3 Code	fill picture hanger holes in Living Room 101	616	sf	$ 0.30	$185	allowance
Level 3 Code	repair cracks in walls at Kitchen 103	416	sf	$ 1.25	$520	allowance
Level 3 Code	replace damaged wood parquet flooring at Hall 105	1	sum	$ 150.00	$150	at entry to bathroom
Level 3 Code	refinish parquet wood flooring in Hall 105	78	sf	$ 5.00	$390	
Level 3 Code	remove/replace frp wall panels in Bathroom 106	176	sf	$ 10.00	$1,760	

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LINE ITEM COST SUMMARY

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Summary Item **1958 Residence Rehabilitation** **Total Cost:** $172,730

Level 3 Code	clean/prep floor	197	sf	$ 1.00	$197	
Level 3 Code	carpet	25	sy	$ 32.00	$800	
Level 3 Code	fill picture hanger holes in Bedroom 112	336	sf	$ 0.30	$101	allowance
Level 3 Code	new gypbd ceiling in Utility Room 001	167	sf	$ 3.50	$585	
Level 3 Code	flash pipe penetrations - allowance	1	sum	$ 500.00	$500	allowance
Level 3 Code	clean/prep floor	167	sf	$ 1.00	$167	
Level 3 Code	new vct flooring in Utility Room 001	167	sf	$ 3.00	$501	
Level 3 Code	002	1	sum	$ 750.00	$750	allowance
Level 3 Code	clean/prep floor	142	sf	$ 1.00	$142	
Level 3 Code	new vct flooring in Store Room 002	142	sf	$ 3.00	$426	
Level 3 Code	new carpet at stairs	31	sf	$ 6.50	$202	
Level 3 Code	repaint interior walls	1368	sf	$ 1.00	$1,368	
Level 3 Code	repaint ceilings	343	sf	$ 1.00	$343	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL INTERIOR FINISHES		**1**	**VALUE**	**$ 11,180.60**	**$11,181**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D20	**PLUMBING**					
Level 3 Code	Demolition					
Level 3 Code	Demo Plumbing Fixtures	8	Ea	$ 264.00	$2,112	
Level 3 Code	Demo water, waste, and vent lines	640	Lf	$ 4.62	$2,957	
Level 3 Code	Waste Drainage Systems					
Level 3 Code	C.I. Waste & Vent AG 2"	100	Lf	$ 28.71	$2,871	
Level 3 Code	C.I. Waste & Vent AG 3"	50	Lf	$ 36.19	$1,810	
Level 3 Code	C.I. Waste & Vent AG 4"	50	Lf	$ 50.82	$2,541	
Level 3 Code	Domestic Hot & Cold Water					
Level 3 Code	L-Cu Dist. Piping 1/2"	160	Lf	$ 17.53	$2,805	
Level 3 Code	L-Cu Dist. Piping 3/4"	60	Lf	$ 21.88	$1,313	
Level 3 Code	L-Cu Dist. Piping 1"	100	Lf	$ 26.06	$2,606	
Level 3 Code	L-Cu Dist. Piping 1-1/4"-1-1/2"	120	Lf	$ 32.07	$3,848	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item **1958 Residence Rehabilitation** **Total Cost:** $172,730

Level 3 Code	RPBA-1) 3/4" Backflow preventer and assoc. piping	1	Sum	$ 1,276.00	$1,276
Level 3 Code	Piping Insulation				
Level 3 Code	Piping Insulation - Domestic H&C	440	Lf	$ 17.60	$7,744
Level 3 Code	Plmbg Fixtures/Commercial				
Level 3 Code	WC-1) Wall Hung flush valve Water Closet w/sensors	2	Ea	$ 1,232.00	$2,464
Level 3 Code	L-1) Lavatory W/H with sensor	2	Ea	$ 1,193.50	$2,387
Level 3 Code	KS-1) Sink - Breakroom	1	Ea	$ 1,127.50	$1,128
Level 3 Code	SHR-1) Stall fiberglass shower complete	1	Ea	$ 3,058.00	$3,058
Level 3 Code	SHR-2) Tub/Shower combo - fiberglass complete	1	Ea	$ 3,586.00	$3,586
Level 3 Code	US-1) Utility Sink	1	Ea	$ 1,028.50	$1,029
Level 3 Code	Plumbing Equipment				
Level 3 Code	SP-1) F&I new storm sump and basin / assoc. piping	1	Ea	$ 9,515.00	$9,515
Level 3 Code	Description	0	Unit	$ -	$0
Level 3 Code	Description	0	Unit	$ -	$0
SUBTOTAL PLUMBING		**1**	**VALUE**	**$ 55,048.66**	**$55,049**

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D30	**HVAC**					
Level 3 Code	Sup/Ret/Gen. Exh. Duct					
Level 3 Code	Clean existing ductwork	1	Sum	$ 1,650.00	$1,650	
Level 3 Code	Exhaust Fans					
Level 3 Code	EF-1&2) Restroom Exhaust Fan	220	CFM	$ 2.04	$448	
Level 3 Code	Air Distribution Devices					
Level 3 Code	Clean and lubricate floor diffusers	10	Ea	$ 69.30	$693	
Level 3 Code	Air & Water Balancing					
Level 3 Code	Air & Water Balancing	1	Sum	$ 605.00	$605	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
SUBTOTAL HVAC		**1**	**VALUE**	**$ 3,395.70**	**$3,396**	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item **1958 Residence Rehabilitation** **Total Cost:** $172,730

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D40	**Fire Protection**					
Level 3 Code	sprinkler entire building	1924	gsf	$ 6.00	$11,544	
Level 3 Code	allowance for new water service line	1	sum	$ 5,000.00	$5,000	extend from 1938 Residence
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FIRE PROTECTION	**1**	**VALUE**	**$ 16,544.00**	**$16,544**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D50	**ELECTRICAL**					
Level 3 Code	New Electrical Panel/Grounding	1	Sum	$ 2,397.50	$2,398	
Level 3 Code	New Feeder	150	Lf	$ 42.47	$6,371	
Level 3 Code	New Duplex Outlet	6	Ea	$ 219.20	$1,315	
Level 3 Code	Sump Pump Connection	1	Ea	$ 438.40	$438	
Level 3 Code	Install New Lighting Fixtures	25	Ea	$ 280.85	$7,021	
Level 3 Code	Install Occupancy Sensors	11	Ea	$ 212.35	$2,336	
Level 3 Code	Conduit	1	Sum	$ 4,986.80	$4,987	
Level 3 Code	Install Fire Alarm Notification Devices	11	Ea	$ 390.45	$4,295	
Level 3 Code	Install Smoke Detectors	13	Ea	$ -	$0	NIC - sprinklers, verify
Level 3 Code	Tie FA Devices to Main FACP	1	Sum	$ 3,178.40	$3,178	
Level 3 Code	Install Door Contacts-Security	4	Ea	$ 325.38	$1,302	
Level 3 Code	Install Security Motion Sensors	8	Ea	$ 359.63	$2,877	
Level 3 Code	Install Lightning Protection	1	Sum	$ 8,220.00	$8,220	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL ELECTRICAL	**1**	**VALUE**	**$ 44,737.35**	**$44,737**	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item **1958 Residence Rehabilitation** **Total Cost:** $172,730

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F20	**SELECTIVE BUILDING DEMOLITION**					
Level 3 Code	remove wood shingle roofing	1995	sf	$ 1.75	$3,491	
Level 3 Code	remove rusting/damaged gutters, assume 25%	31	lf	$ 2.00	$62	
Level 3 Code	remove damaged plywood soffits, assume 25%	77	sf	$ 1.50	$116	
Level 3 Code	remove screen door #102	1	ea	$ 75.00	$75	
Level 3 Code	remove carpet flooring	197	sf	$ 1.00	$197	
Level 3 Code	remove gypbd ceiling in Utility Room 001	167	sf	$ 1.00	$167	
Level 3 Code	remove floor finishes in Utility Room 001	167	sf	$ 1.00	$167	
Level 3 Code	remove floor finishes in Store Room 002	142	sf	$ 1.00	$142	
Level 3 Code	remove carpet at stairs	31	sf	$ 2.00	$62	
Level 3 Code	Haul & Disposal	1	sum	$ 448.00	$448	
Level 3 Code	Remove HVAC Duct Wrap	150	lf	$ 12.00	$1,800	
Level 3 Code	Remove Pipe Fitting	20	ea	$ 75.00	$1,500	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SELECTIVE BUILDING DEMOLITION	**1**	**VALUE**	**$ 8,226.75**	**$8,227**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST - 1958 Residence Rehabilitation		**1**	**VALUE**	**$ 172,730.31**	**$172,730**	

United States Department of the Interior
National Park Service
Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

Project:	**Rehab to Visitor Center, 1938 Residence, 1958 Residence & Maintenance Shop**	**Estimate By:**	Terence Walton
Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16
Summary Item	**Maintenance Shop Rehabilitation**	**Total Cost:**	$319,466

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B10	**SUPERSTRUCTURE**					
Level 3 Code	strengthen connection at roof bwtn 1936 & 1957 bldgs	1	sum	$ 3,500.00	$3,500	allowance
Level 3 Code	replace decayed material at roof at west end of bldg	1	sum	$ 5,000.00	$5,000	allowance
Level 3 Code	replace decayed base at columns	14	ea	$ 3,000.00	$42,000	allowance
Level 3 Code	install steel angle at junction of adobe & cmu walls	1	sum	$ 560.00	$560	allowance
Level 3 Code	install steel straps & clips/anchors	2	ea	$ 350.00	$700	allowance
Level 3 Code	rebuilt bulging adobe wall bwtn 1936 & 1957 bldgs	1	sum	$ 4,000.00	$4,000	allowance
Level 3 Code	repoint cmu wall at joint bwtn 1971 & 1981 bldgs	1	sum	$ 450.00	$450	
Level 3 Code	patch holes in adobe created by critters - allowance	1	sum	$ 2,000.00	$2,000	allowance
Level 3 Code	strap/blkg/clips at roof to wall - allowance	401	lf	$ 25.00	$10,025	
Level 3 Code	allowance for procurement of adobe bricks	1	sum	$ 2,500.00	$2,500	allowance
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SUPESTRUCTURE	**1**	**VALUE**	**$ 70,735.00**	**$70,735**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B20	**EXTERIOR CLOSURE**					
Level 3 Code	replace stucco system at grade	67	lf	$ 25.00	$1,675	
Level 3 Code	replace insulation at North Elev - East end	320	sf	$ 2.25	$720	
Level 3 Code	stucco finish @ above	320	sf	$ 16.00	$5,120	
Level 3 Code	remove loose paint & repaint area of wall	1013	sf	$ 1.50	$1,520	allowance
Level 3 Code	prep/clean & repaint windows #105 & 106	49	sf	$ 12.00	$588	
Level 3 Code	patch & repaint window sill - window #107	6	lf	$ 20.00	$120	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL EXTERIOR CLOSURE	**1**	**VALUE**	**$ 9,742.50**	**$9,743**	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

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Park:	**Scotts Bluff National Monument**	**Date:**	11/3/2016 - V 1.3
Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item **Maintenance Shop Rehabilitation** **Total Cost:** $319,466

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
B30	**ROOFING**					
Level 3 Code	new wood shingle roofing, dark reddish stain	5484	sf	$ 8.50	$46,614	pre-dipped in stain
Level 3 Code	felt paper / underlayment	6033	sf	$ 0.35	$2,112	
Level 3 Code	wood shingle ridge cap	176	lf	$ 10.00	$1,760	
Level 3 Code	metal drip edge flashing	426	lf	$ 8.50	$3,621	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL ROOFING	**1**	**VALUE**	**$ 54,106.55**	**$54,107**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C10	**INTERIOR CONSTRUCTION**					
Level 3 Code	replace door hardware - install lever arm	1	ea	$ 500.00	$500	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL INTERIOR CONSTRUCTION	**1**	**VALUE**	**$ 500.00**	**$500**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
C30	**INTERIOR FINISHES**					
Level 3 Code	repair crack in wall & paint - Shop Area 2 (106)	1	sum	$ 350.00	$350	allowance
Level 3 Code	restucco and paint adobe cross wall bwtn bldgs	432	sf	$ 11.00	$4,752	
Level 3 Code	restucco and paint adobe walls at Bays 4,5,6,7	368	sf	$ 11.00	$4,048	
Level 3 Code	patch/repair plaster walls at Bay 9	1	sum	$ 1,200.00	$1,200	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL INTERIOR FINISHES	**1**	**VALUE**	**$ 10,350.00**	**$10,350**	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

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Summary Item **Maintenance Shop Rehabilitation** **Total Cost:** $319,466

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D20	**PLUMBING**					
Level 3 Code	Demolition					
Level 3 Code	Demo Plumbing Fixtures	8	Ea	$ 264.00	$2,112	
Level 3 Code	Demo water lines	400	Lf	$ 4.62	$1,848	
Level 3 Code	Gas Piping					
Level 3 Code	F&I new gas meter - manual read	1	Sum	$ 2,035.00	$2,035	
Level 3 Code	Domestic Hot & Cold Water					
Level 3 Code	L-Cu Dist. Piping 1/2"	50	Lf	$ 17.53	$877	
Level 3 Code	L-Cu Dist. Piping 3/4"	100	Lf	$ 21.88	$2,188	
Level 3 Code	L-Cu Dist. Piping 1"	120	Lf	$ 26.06	$3,127	
Level 3 Code	L-Cu Dist. Piping 1-1/4"-1-1/2"	100	Lf	$ 32.07	$3,207	
Level 3 Code	RPBA-1) 3/4" Backflow preventer and assoc. piping	1	Sum	$ 1,276.00	$1,276	
Level 3 Code	Piping Insulation					
Level 3 Code	Piping Insulation - Domestic H&C	370	Lf	$ 17.60	$6,512	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL PLUMBING	**1**	**VALUE**	**$ 23,181.95**	**$23,182**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D30	**HVAC**					
Level 3 Code	HVAC Equipment					
Level 3 Code	Demo Gas Unit Heaters	4	Ea	$ 401.50	$1,606	
Level 3 Code	F&I new Gas Unit Heaters	4	Ea	$ 5,478.00	$21,912	
Level 3 Code	Demo Electric Unit Heaters	2	Ea	$ 275.00	$550	
Level 3 Code	F&I new Electric Unit Heaters	2	Ea	$ 1,947.00	$3,894	
Level 3 Code	Service & provide new wood-chuck flue	1	Sum	$ 3,850.00	$3,850	
Level 3 Code	Rigging	1	Sum	$ 550.00	$550	
Level 3 Code	ATC Controls					

United States Department of the Interior
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LINE ITEM COST SUMMARY

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Park Alpha:	**SCBL**	**Reviewed By:**	SJP
PMIS Number:	**152851**	**Date:**	08/10/16

Summary Item	**Maintenance Shop Rehabilitation**				**Total Cost:**	$319,466
Level 3 Code	Programmable Thermostats	6	Ea	$ 1,210.00	$7,260	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL HVAC	**1**	**VALUE**	**$ 39,622.00**	**$39,622**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D40	**Fire Protection**					
Level 3 Code	sprinkler entire building	4254	gsf	$ 6.00	$25,524	
Level 3 Code	allowance for new water service line	1	sum	$ 5,000.00	$5,000	extend from 1938 Residence
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL FIRE PROTECTION	**1**	**VALUE**	**$ 30,524.00**	**$30,524**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
D50	**ELECTRICAL**					
Level 3 Code	Furnish/Install 300 kva transformer & Pad	1	Sum	$ 18,878.60	$18,879	
Level 3 Code	Secondary Conduits	1	Sum	$ 2,877.00	$2,877	
Level 3 Code	Trenching	1	Sum	$ 3,575.70	$3,576	
Level 3 Code	New Electrical Service Panel/Grounding	1	Sum	$ 9,042.00	$9,042	
Level 3 Code	Install Exit Signs	3	Ea	$ 397.30	$1,192	
Level 3 Code	Install EM Fixtures	3	Ea	$ 465.80	$1,397	
Level 3 Code	Conduit	1	Sum	$ 9,590.00	$9,590	
Level 3 Code	Install Fire Alarm Notification Devices	15	Ea	$ 390.45	$5,857	
Level 3 Code	Install Smoke Detectors	28	Ea	$ -	$0	NIC - sprinklers, verify
Level 3 Code	Tie FA Devices to Main FACP	1	Sum	$ 1,890.60	$1,891	
Level 3 Code	Install Door Contacts-Security	13	Ea	$ 325.38	$4,230	

United States Department of the Interior
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Class C Construction Cost Estimate

LINE ITEM COST SUMMARY

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PMIS Number:	**152851**	**Date:**	08/10/16

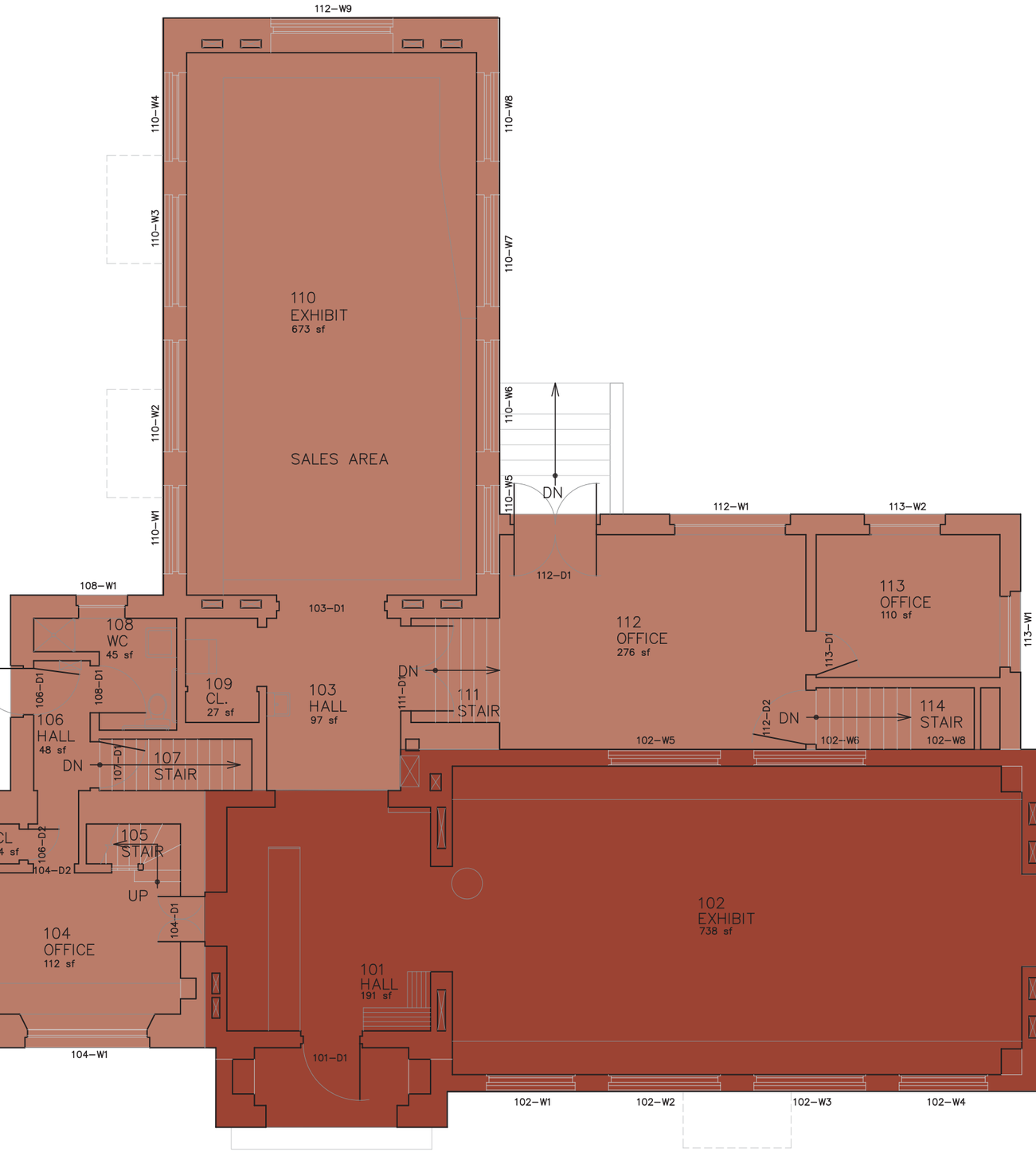
Summary Item	**Maintenance Shop Rehabilitation**				**Total Cost:**	$319,466
Level 3 Code	Install Security Motion Sensors	4	Ea	$ 359.63	$1,439	
Level 3 Code	Install Lightning Protection	1	Sum	$ 9,590.00	$9,590	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL ELECTRICAL	**1**	**VALUE**	**$ 69,558.33**	**$69,558**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
F20	**SELECTIVE BUILDING DEMOLITION**					
Level 3 Code	remove wood shingle roofing	5484	sf	$ 1.75	$9,597	
Level 3 Code	remove stucco at grade	67	lf	$ 8.00	$536	
Level 3 Code	Haul & Disposal	1	sum	$ 1,013.00	$1,013	
Level 3 Code	Description	0	Unit	$ -	$0	
Level 3 Code	Description	0	Unit	$ -	$0	
	SUBTOTAL SELECTIVE BUILDING DEMOLITION	**1**	**VALUE**	**$ 11,146.00**	**$11,146**	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
TOTAL COST	**Maintenance Shop Rehabilitation**	**1**	**VALUE**	**$ 319,466.33**	**$319,466**	

Appendix C: 2015 Building Development and Feature Study

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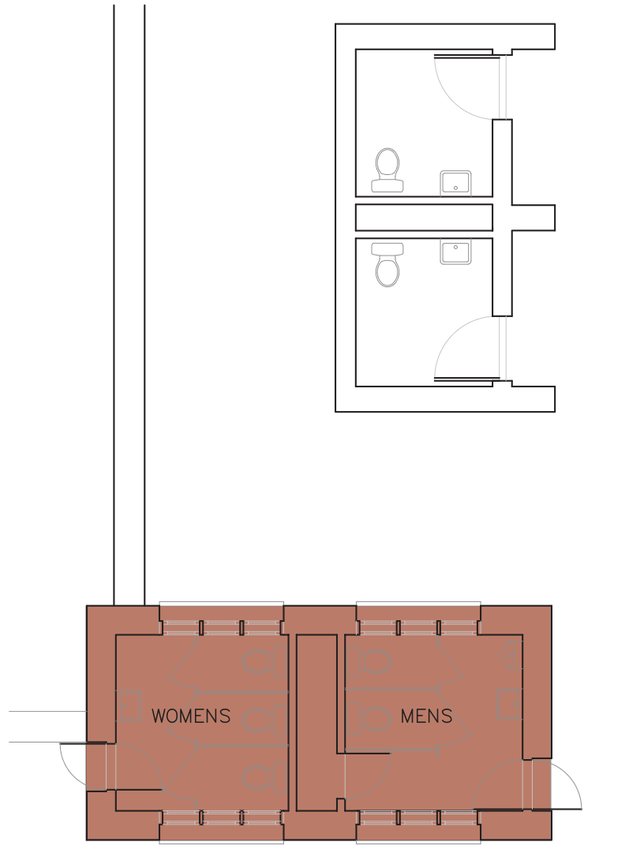
1935-1936 ORIGINAL MUSEUM

1937 CCC VISITOR CENTER EXPANSION

1949 JACKSON ADDITION

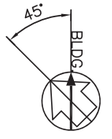
1 A1.14 VISITOR CENTER – MAIN LEVEL PLAN – PART A – BUILDING EVOLUTION

SCALE A



2 A1.14 VISITOR CENTER – MAIN LEVEL PLAN – PART B

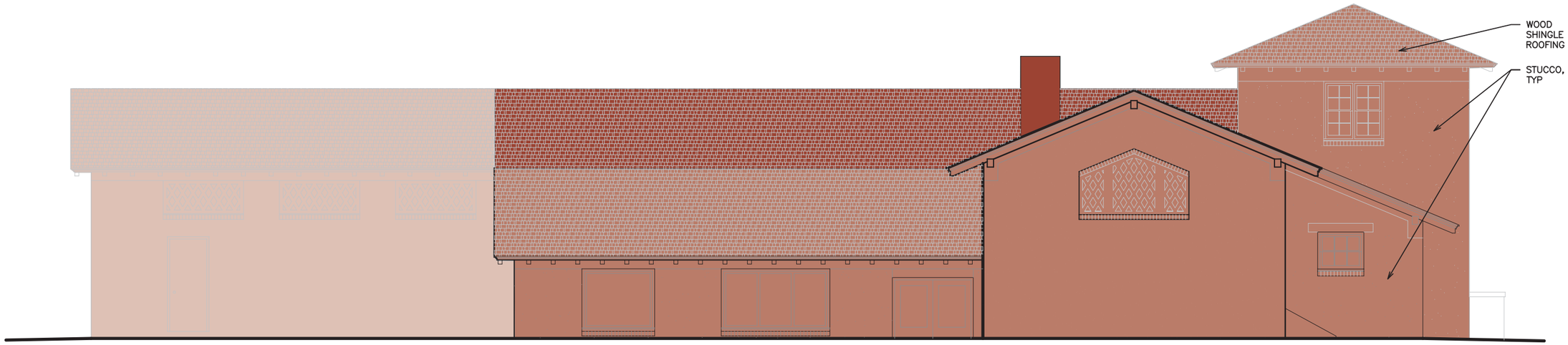
SCALE A



SCALE A 4 0 4 8 SCALE OF FEET

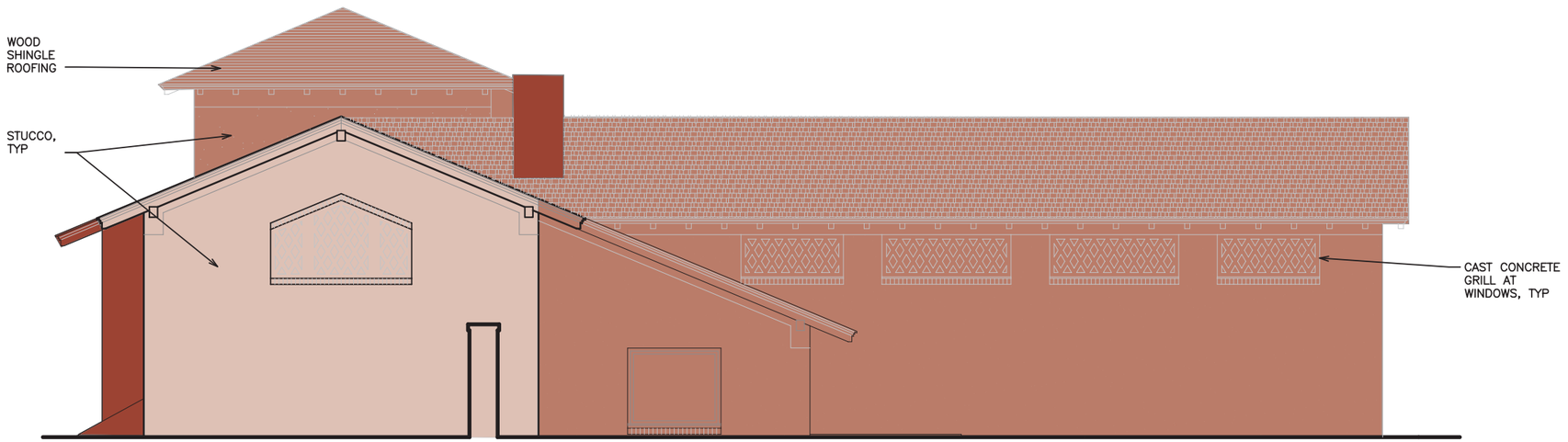
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DRAWN: DAM			PMIS/PKG NO. 152851
TECH. REVIEW: NAA		SCOTTS BLUFF NATIONAL MONUMENT	SHEET 18 OF 23
DATE: 07/31/2015			

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1 / A1.17 VISITOR CENTER – NORTH ELEVATION – BUILDING EVOLUTION

SCALE Ⓐ



1935-1936	ORIGINAL MUSEUM
1937	CCC VISITOR CENTER EXPANSION
1949	JACKSON ADDITION

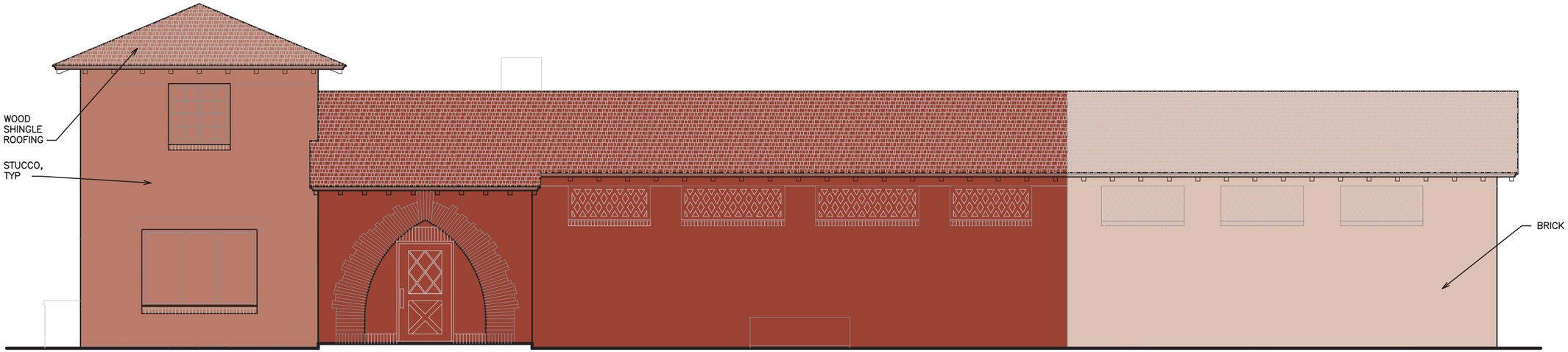
SCALE Ⓐ 4 0 4 8
SCALE OF FEET

2 / A1.17 VISITOR CENTER – EAST ELEVATION – BUILDING EVOLUTION

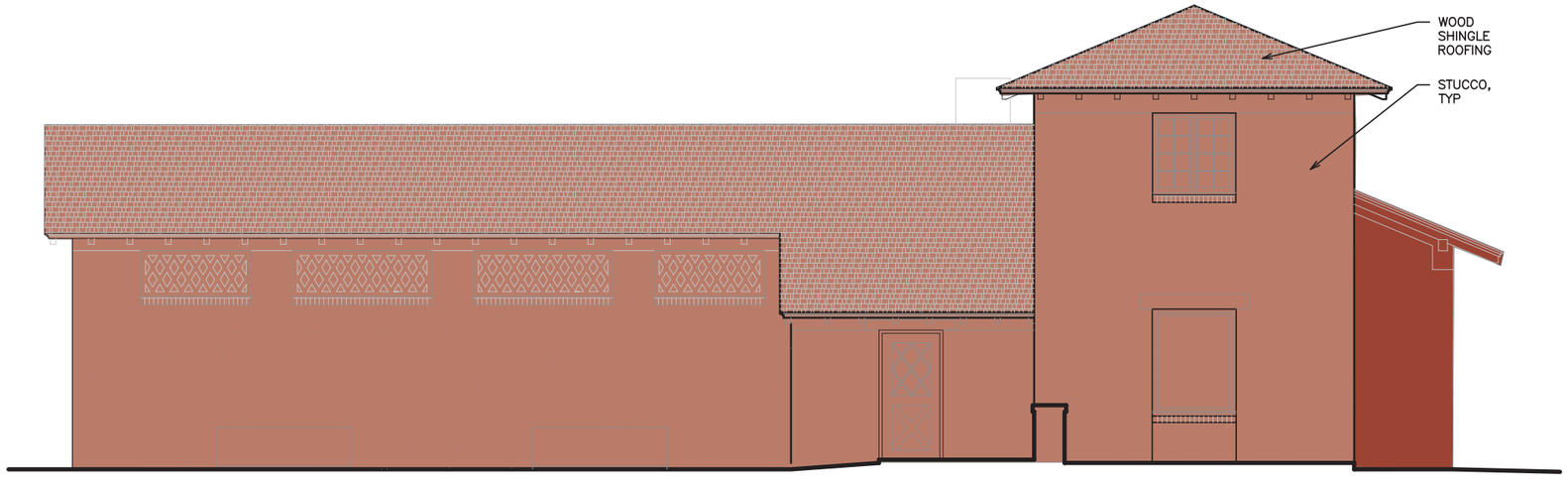
SCALE Ⓐ

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1 A1.18 VISITOR CENTER – SOUTH ELEVATION – BUILDING EVOLUTION
SCALE (A)



1935-1936 ORIGINAL MUSEUM

1937 CCC VISITOR CENTER EXPANSION

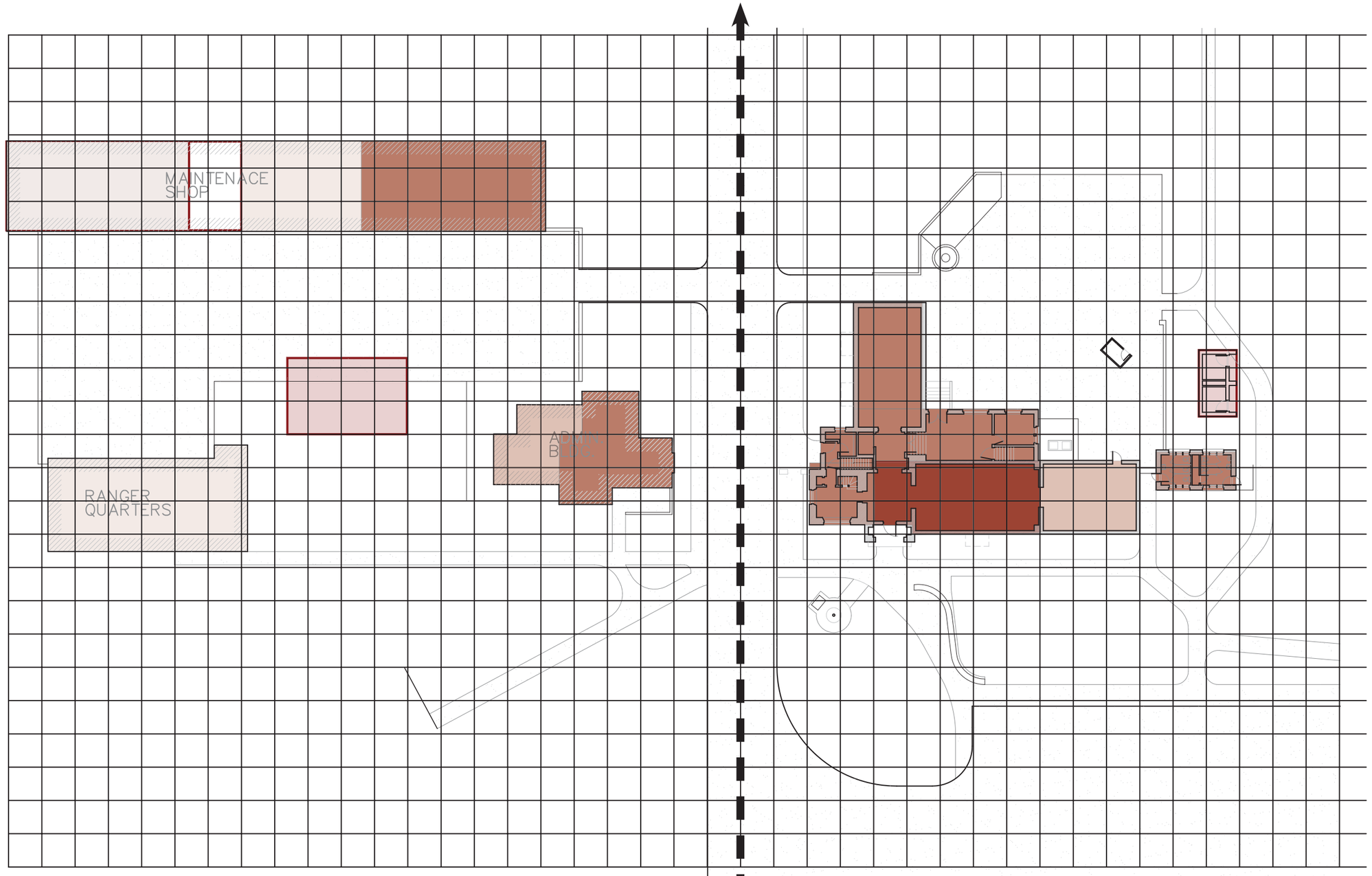
1949 JACKSON ADDITION

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2 A1.18 VISITOR CENTER – WEST ELEVATION – BUILDING EVOLUTION
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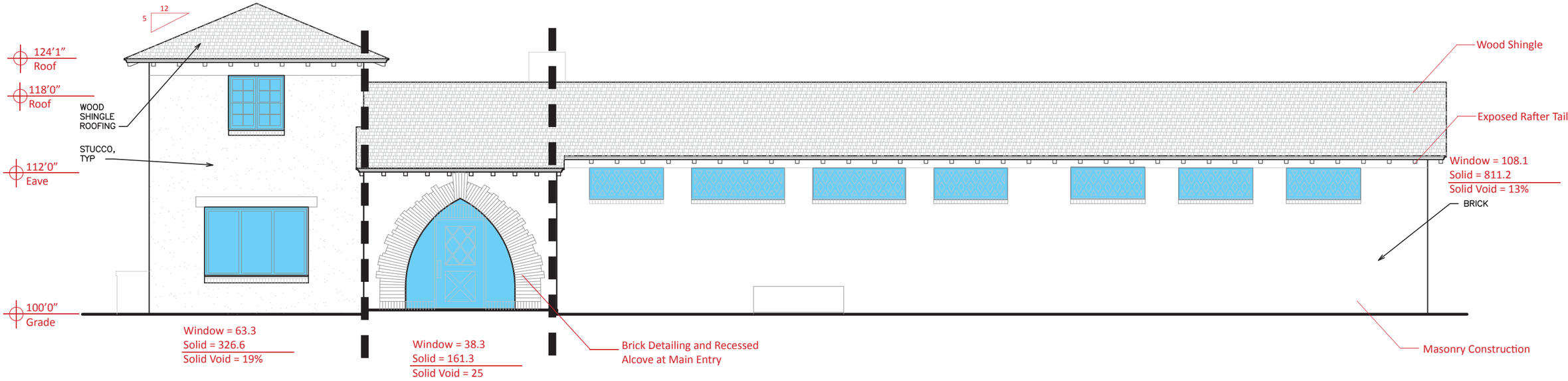
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1 / A1.0 SITE PLAN – 8' GRID – BUILDING EVOLUTION
SCALE Ⓐ

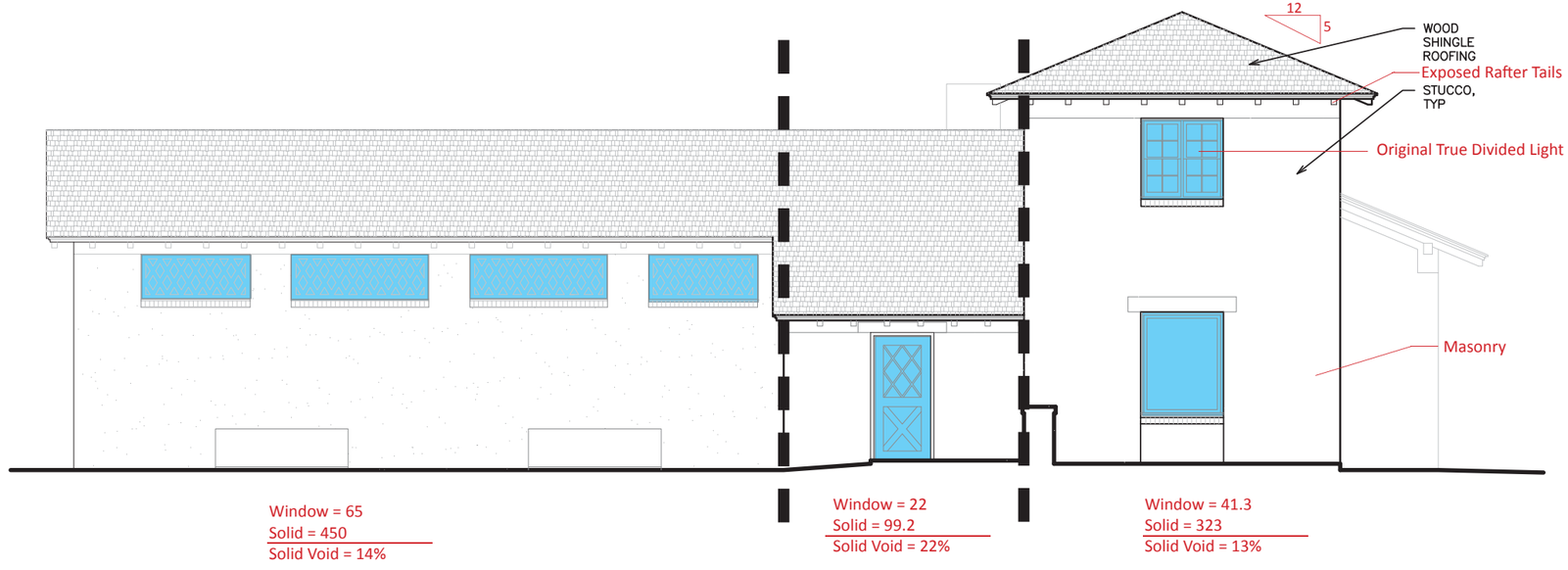
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1 A1.18 VISITOR CENTER – SOUTH ELEVATION – BUILDING COMPONENT ANALYSIS

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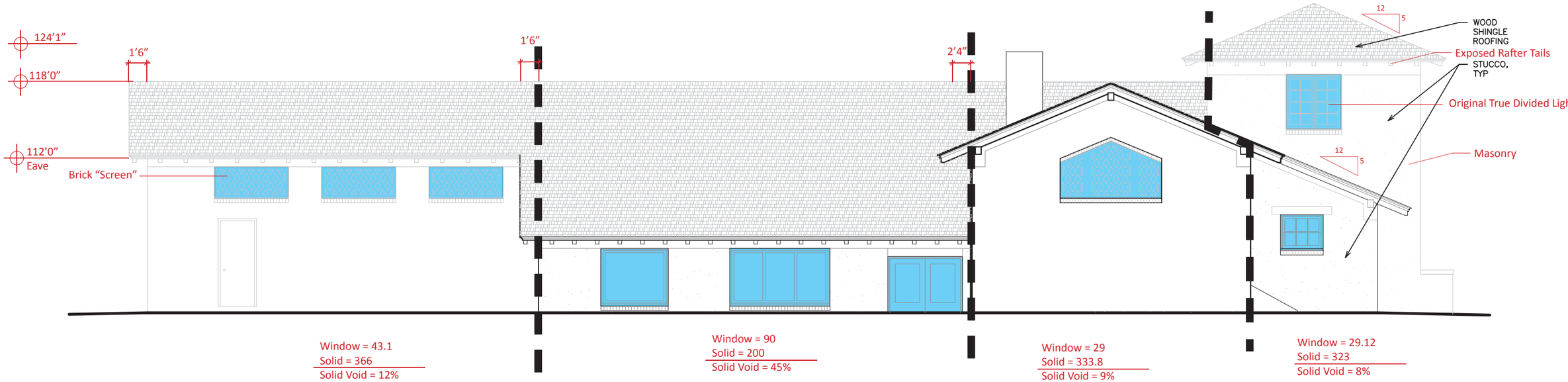
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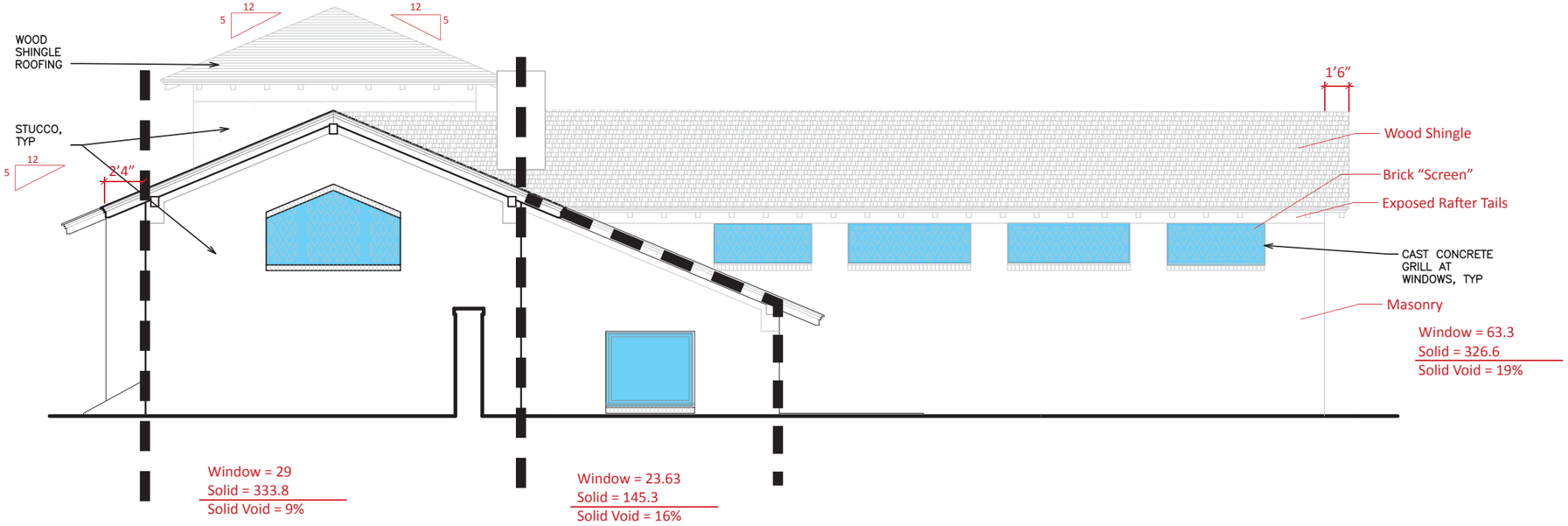
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1 A1.17 VISITOR CENTER – NORTH ELEVATION – BUILDING COMPONENT ANALYSIS

SCALE (A)



2 A1.17 VISITOR CENTER – EAST ELEVATION – BUILDING COMPONENT ANALYSIS

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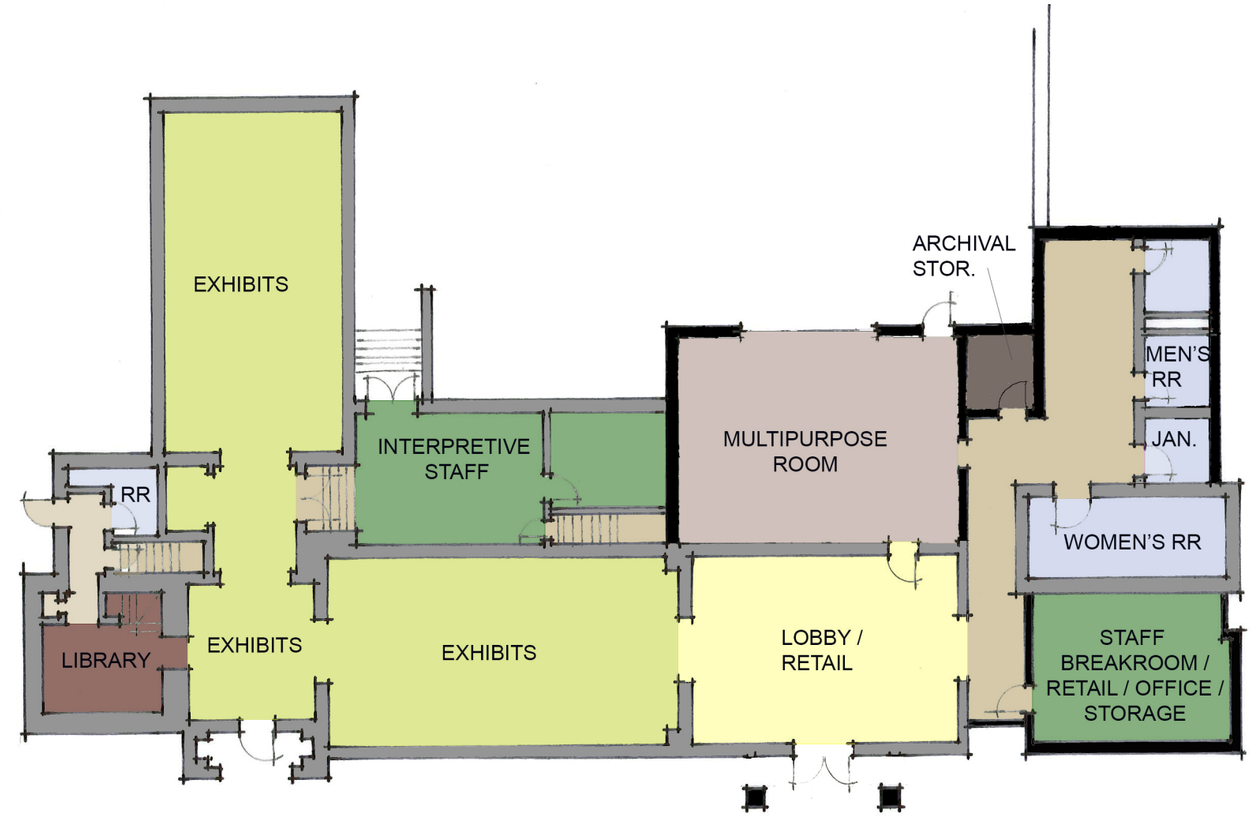
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Appendix D: 2016 Visitor Center VA Treatment Alternatives

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SCALE OF FEET

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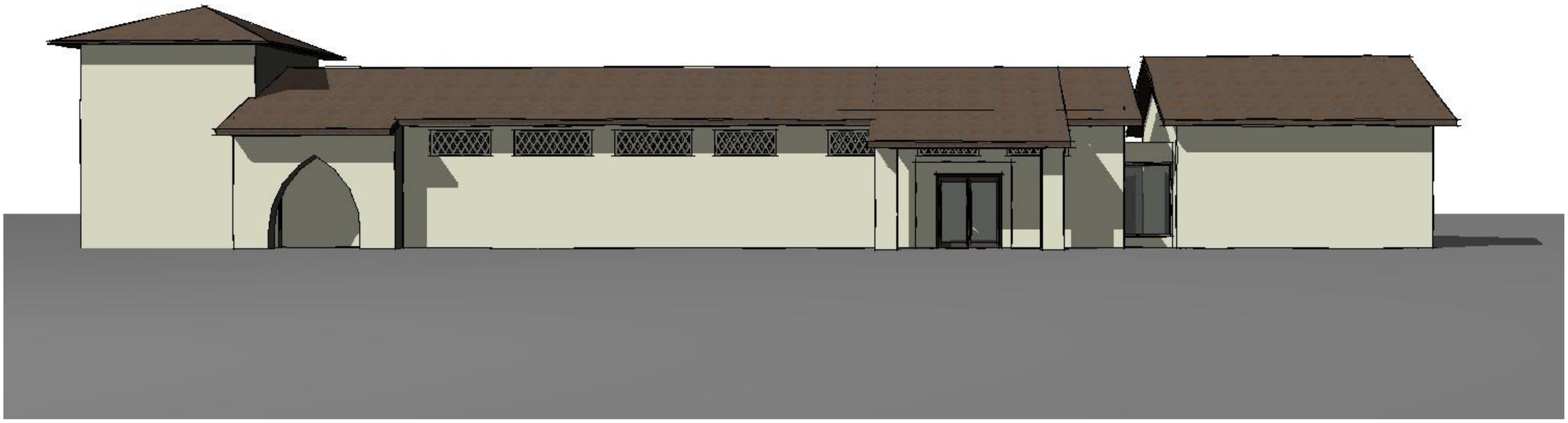
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NAME OF PARK

SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA



SOUTH ELEVATION

MAY 2016

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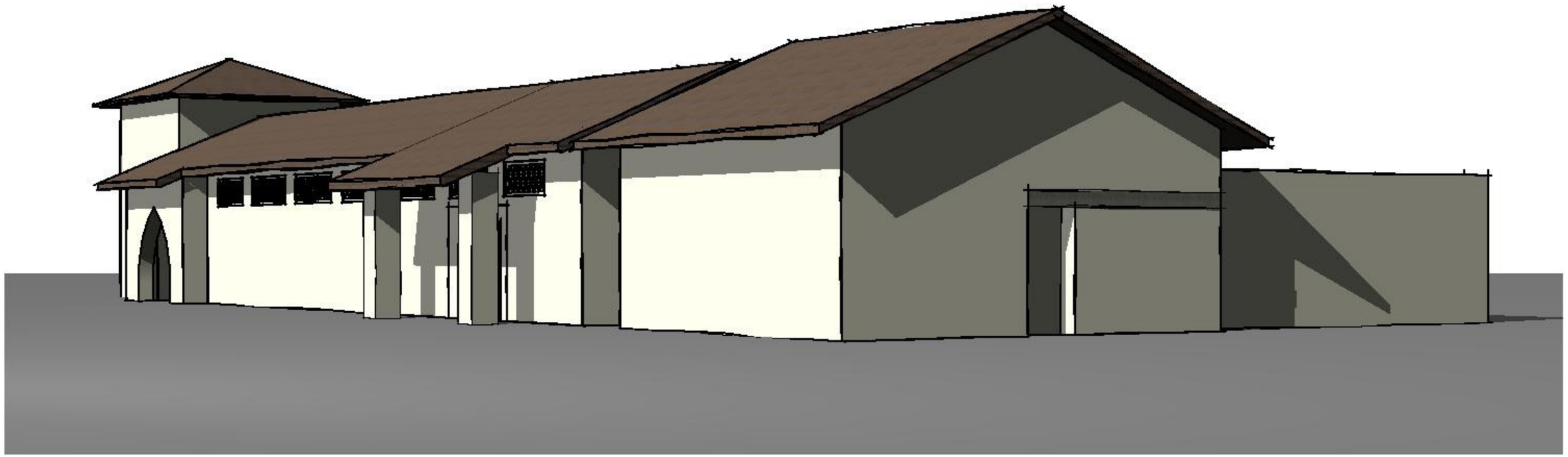
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EAST ELEVATION

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CCC COMPLEX

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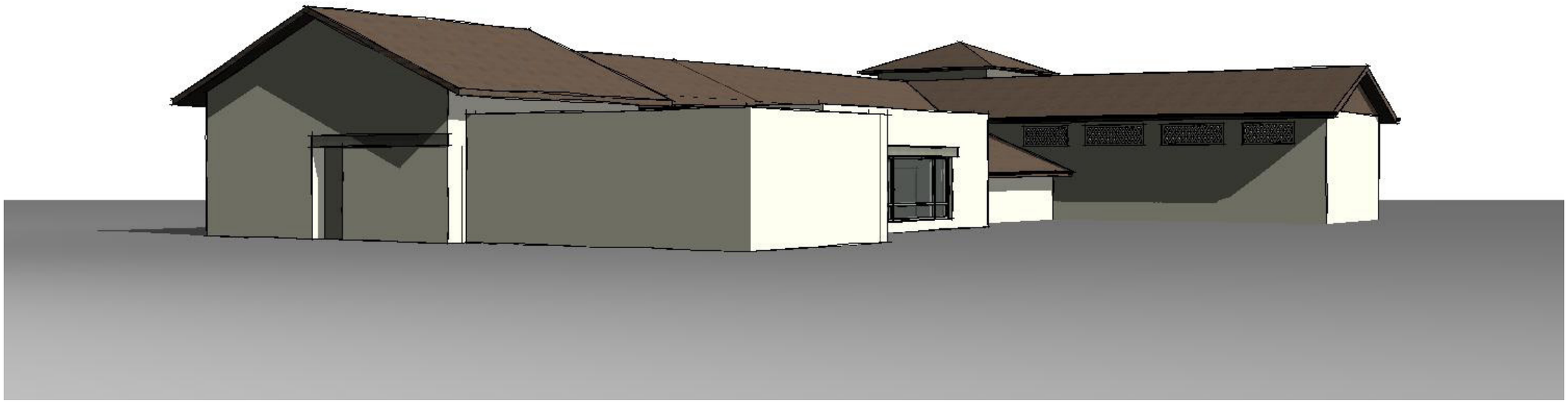
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NORTHEAST ELEVATION

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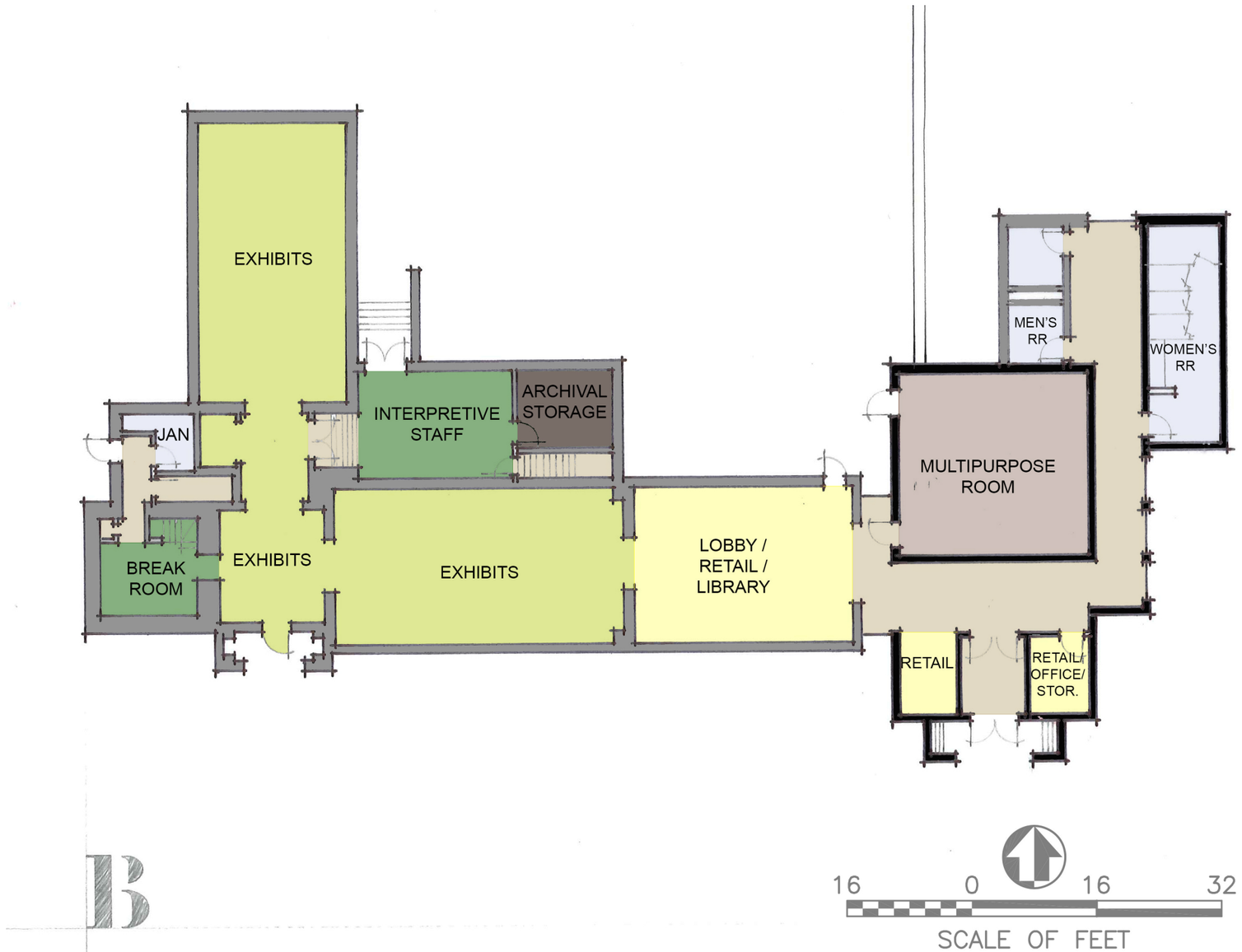
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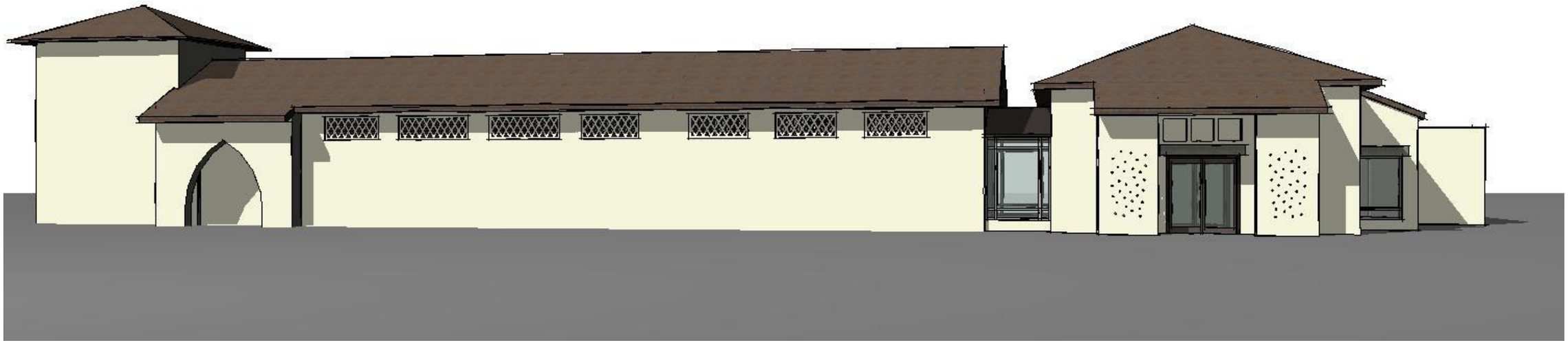
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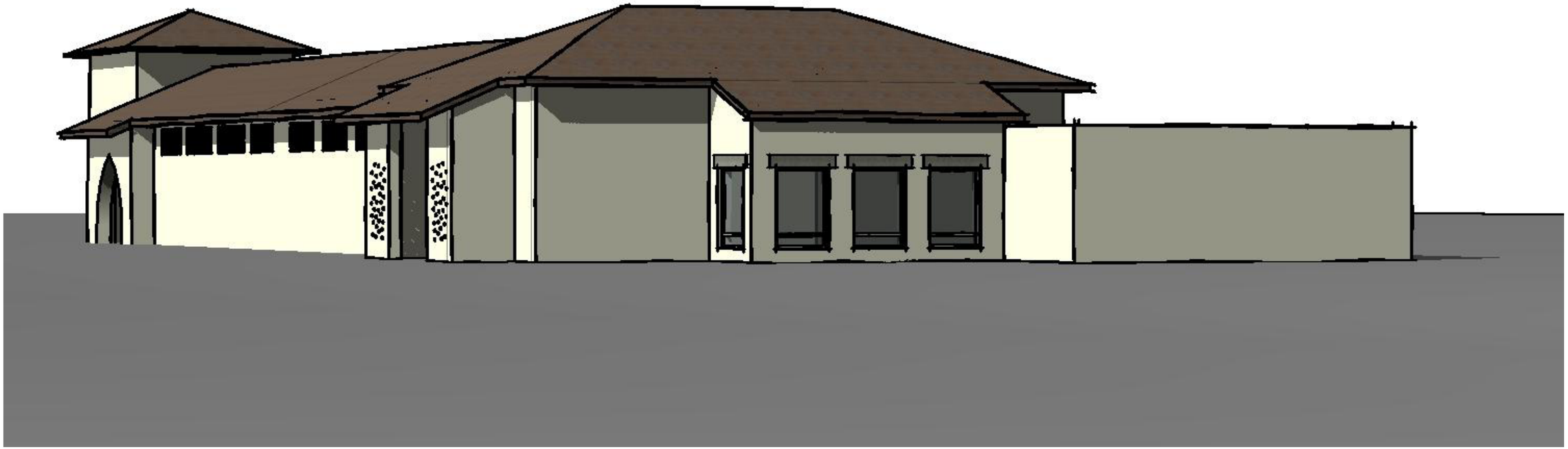
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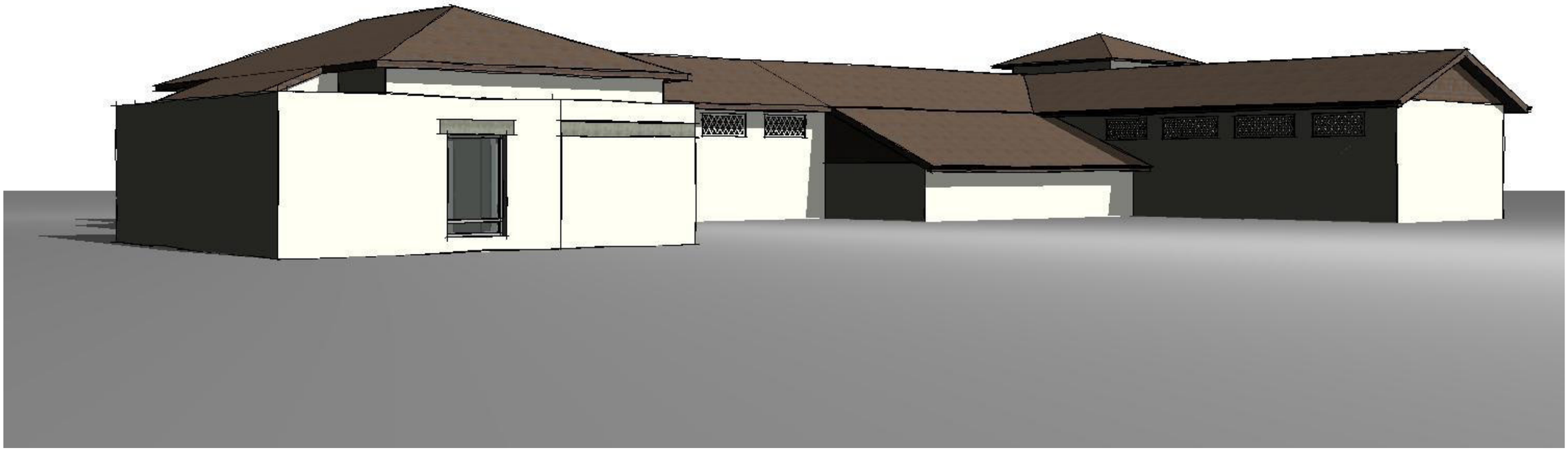
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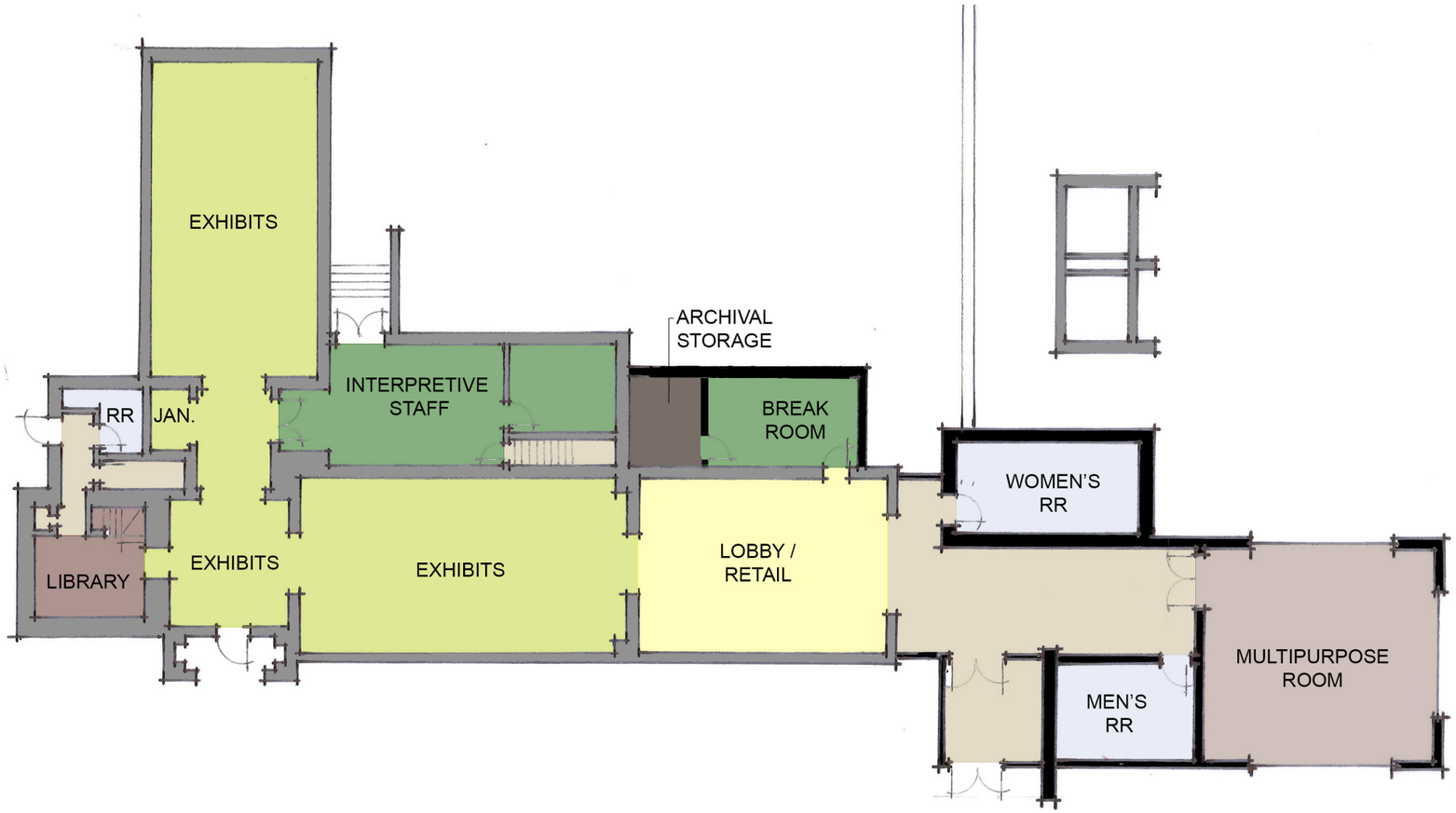
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SCALE OF FEET

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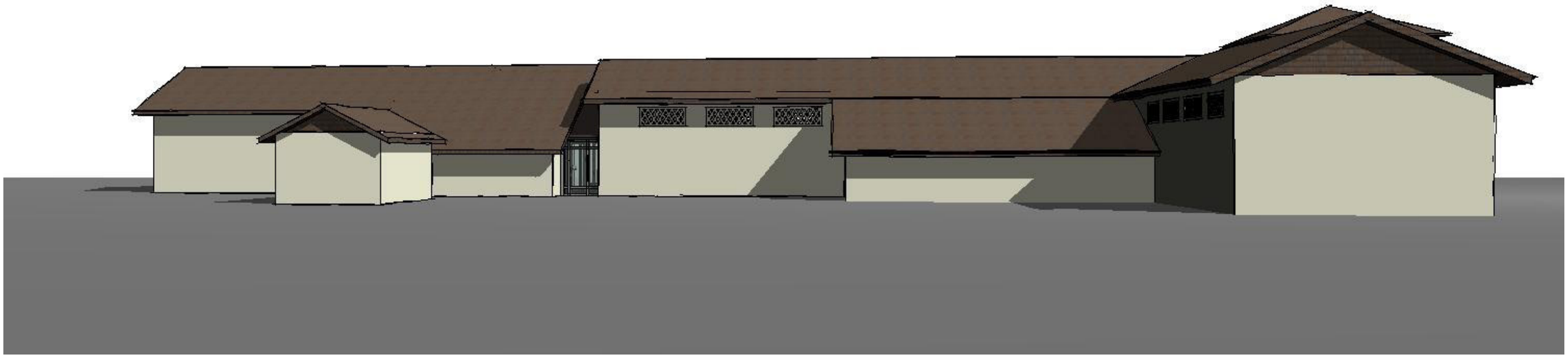
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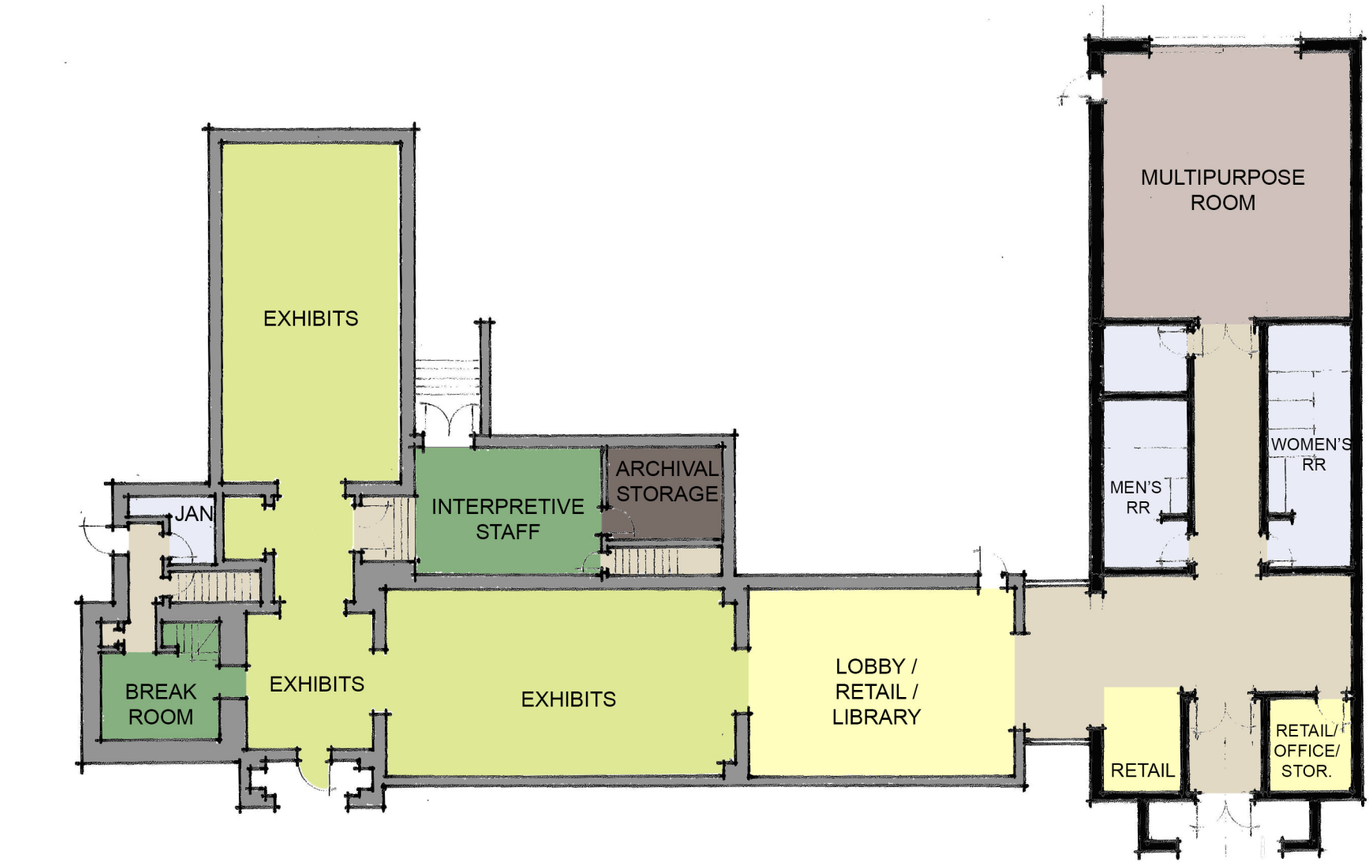
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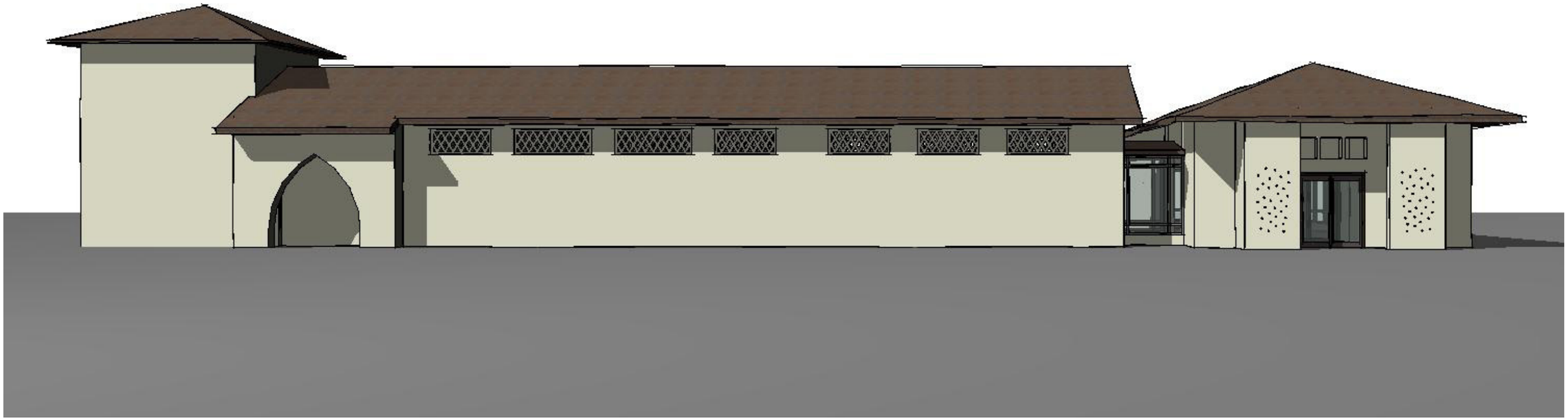
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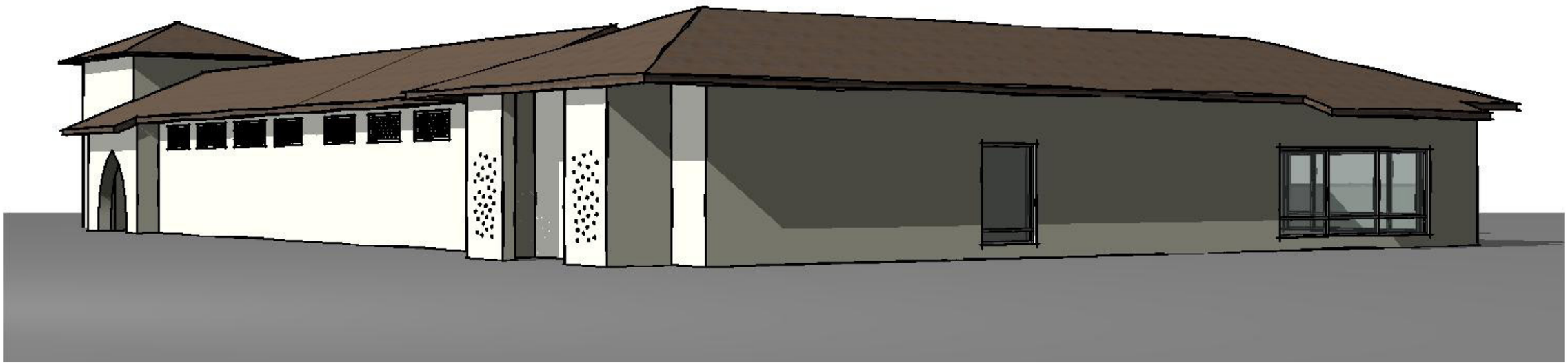
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SOUTHEAST ELEVATION

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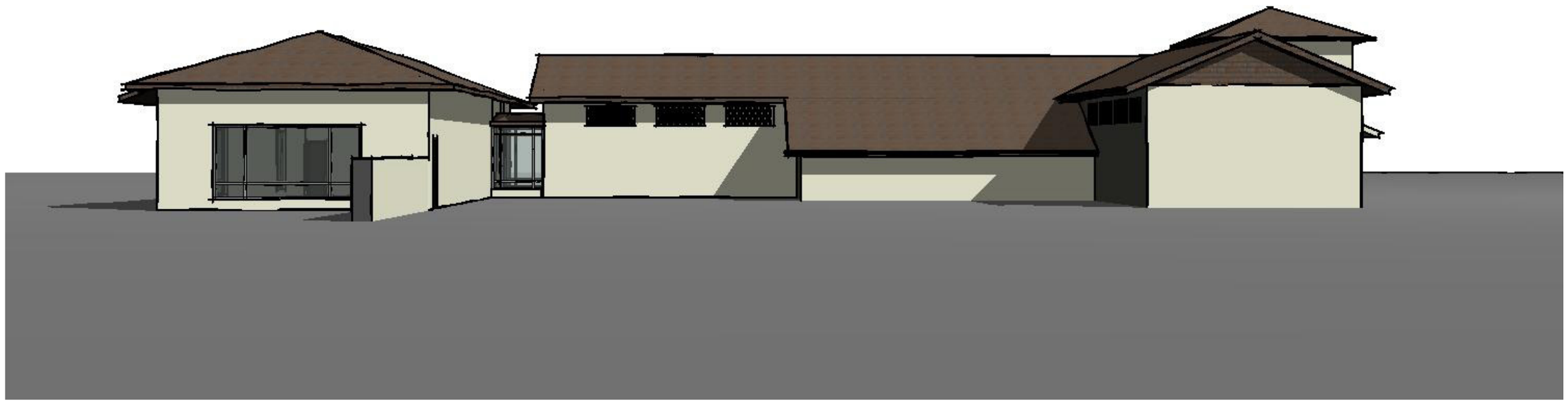
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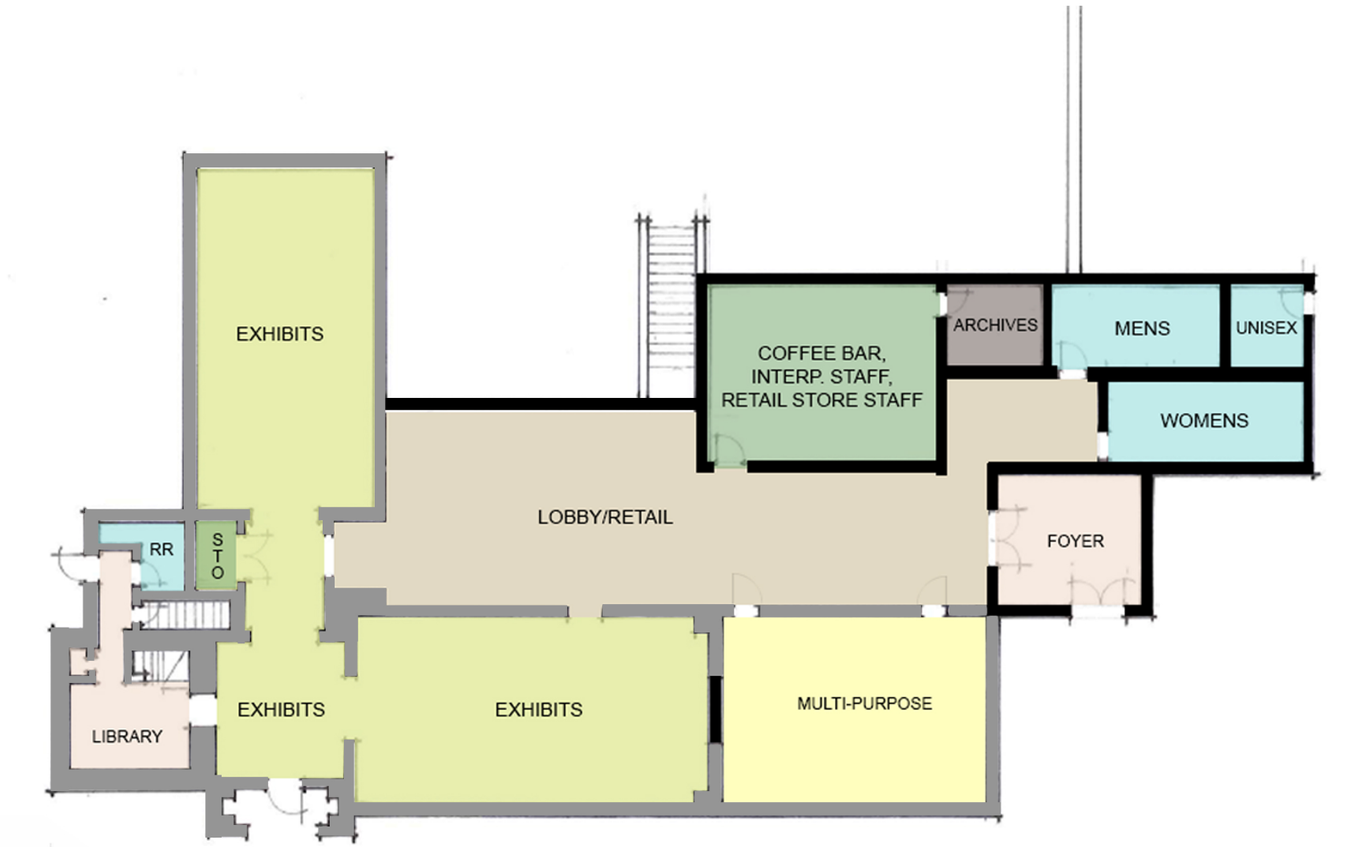
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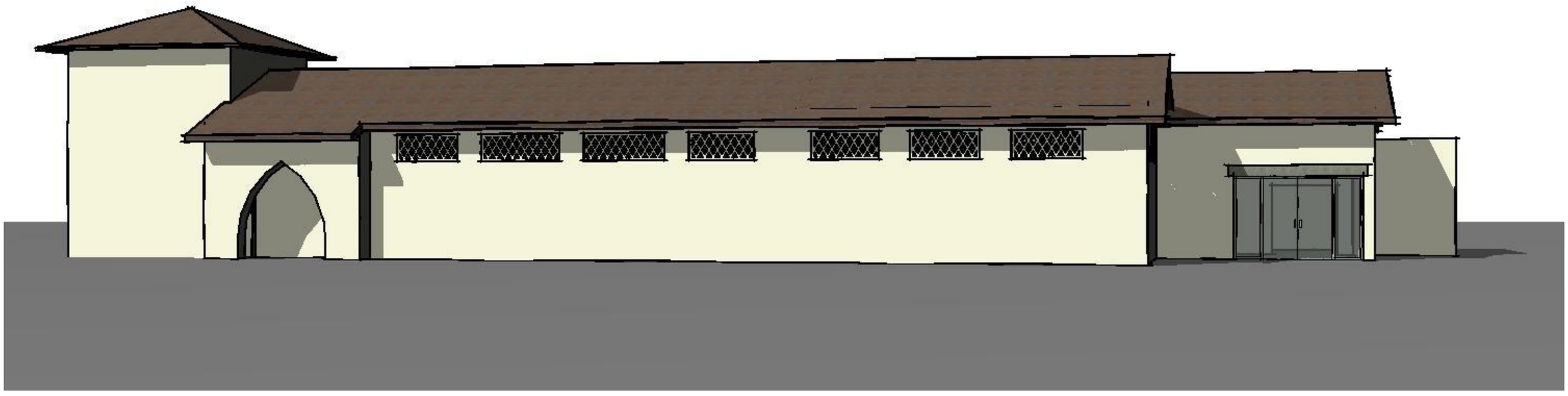
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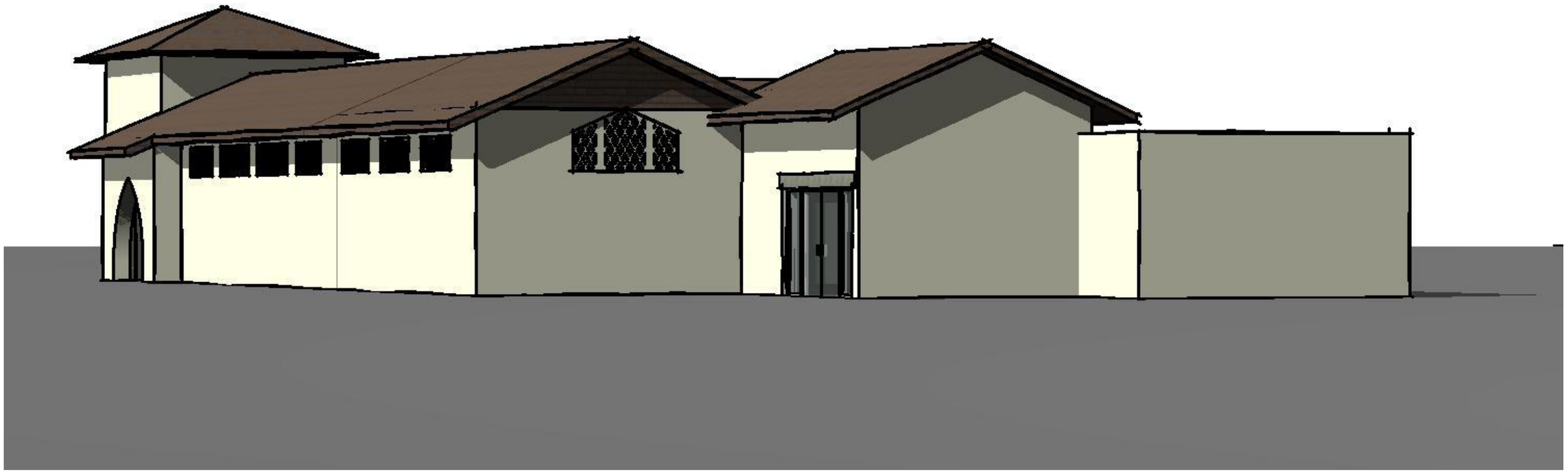


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UNITED STATES DEPARTMENT OF THE INTERIOR SCOTTS BLUFF NATIONAL MONUMENT CCC COMPLEX	TITLE OF DRAWING ALTERNATIVE - E NAME OF PARK SCOTTS BLUFF NATIONAL MONUMENT
	REGION: MIDWEST COUNTY: SCOTTS BLUFF STATE: NEBRASKA



SOUTH ELEVATION

JUNE 2016	TITLE OF PROJECT VISITOR CENTER REHABILITATION / EXPANSION
UNITED STATES DEPARTMENT OF THE INTERIOR SCOTTS BLUFF NATIONAL MONUMENT CCC COMPLEX	TITLE OF DRAWING ALTERNATIVE - E NAME OF PARK SCOTTS BLUFF NATIONAL MONUMENT
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SOUTHEAST ELEVATION

JUNE 2016	TITLE OF PROJECT VISITOR CENTER REHABILITATION / EXPANSION
UNITED STATES DEPARTMENT OF THE INTERIOR SCOTTS BLUFF NATIONAL MONUMENT CCC COMPLEX	TITLE OF DRAWING ALTERNATIVE - E NAME OF PARK SCOTTS BLUFF NATIONAL MONUMENT
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NORTHEAST ELEVATION

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Appendix E: Paint and Material Analysis

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BUILT ENVIRONMENT EVOLUTION

PRESERVING THE PAST TRANSFORMING TOMORROW

PAINT REPORT
FOR THE
SCBL
SCOTTS BLUFF NATIONAL MONUMENT
NEBRASKA

FOR
ANDERSON HALLAS ARCHITECTS

OCTOBER 6, 2015

BUILT ENVIRONMENT EVOLUTION

PO BOX 21433 BOULDER, CO 80308 303.562.5872

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(for printing using double sided pages)

PO BOX 21433 BOULDER, CO 80308 303.562.5872

Paint has been used for millennia to beautify and protect both interior and exterior surfaces of structures. The mixes, binders, pigments, solvents and techniques have evolved over time. Knowledge of these changes informs the investigation process when analyzing a structure, and when analyzing paint.

COMMON TERMS AND DEFINITIONS

- Oil – binds the pigment together, affects gloss, and dry time. Common oils used in structural coatings include linseed oil, Tung oil, in some areas fish oil, etc.
- Distemper – pigment, casein or animal glue, water.
- Milk Paint – milk (casein binder), lime, pigment.
- Calcimine – pigment, lime, water, animal glue or casein.
- Lime wash, Color wash – water and lime, with pigment added for colors.
- Encaustic – hot wax painting.
- Tempera – water and pigment, egg yolk can be added.
- Turpentine, - originally distilled from the resign of the terebinth or turpentine tree, found in the Mediterranean. Later distilled from various pines.
- Mineral spirits – distilled from petroleum.
- Varnish – Dammar Varnish from Dammar gum.
- Metal coatings – such as alkyd enamels, exposure to oxygen polymerizes the binder.
- Modern Paints
    - Latex – water-borne sub-micrometer polymer particles (rubber latex is not a component)
    - Epoxies and Polyurethanes – cures via catalyzed polymerization forming a hard plastic surface
    - Powder coatings – little or no solvent used, applied to a surface that has been treated with an electrostatic application of dry powder and heated.
    - May contain additives – can affect surface tension, improve flow, control skinning, fight bacterial growth, etc.

PO BOX 21433 BOULDER, CO 80308 303.562.5872

PERFORMANCE

Paint has been used to protect both interior and exterior surfaces, and to express the style of the time and the tastes of the owner. Using paint as a protective coating can help prevent moisture penetration of the substrate, prevent deterioration of the substrate from ultra violet light, and can also prevent scuffs and abrasive damage. It is easy to maintain paint coatings and cheap to use for this purpose. Color has been part of paint from the earliest signs of its use. Used to express the style of the period, paint has been used to decorate for millennia. Often it is used as an indication of important space, a public space, or a sacred space. Expense of the paint treatment is related to the pigments included in the paint, and the techniques employed.

A BRIEF HISTORY OF PAINT

As paint has developed over time, so have the formulas. The search for pigments that have lasting color continues today. Some of the first pigments were earth, clay, and plant products. The Egyptians were the first recorded to use ground glass as pigments. White lead and red lead have been used for over four thousand years. Distant travel to the Far East and the Americas yielded new pigments made from items such as semi-precious gemstones, and insects. The industrial revolution yielded new colors and pigments, but the most radical changes came during and after WWII as the world embraced chemistry and changed paint formulas and pigments. With the knowledge of paint history, it can be possible to identify the time of the paint application from the pigments, the binders, and the colors that were used.

PAINT ANALYSIS AND USES

Paint Analysis can allow a conservator to understand the original paint scheme, identify newer materials and/or additions to a structure, and the correct identification of the various layers can tell the history and care of the space. Once the paint has been sampled, it is viewed through the microscope, and the original treatment of the substrate becomes clear. Sampling of the structure is critical to correctly identify the paint scheme. Sampling in areas with the least exposure to causes of deterioration, such as sunlight, the elements, smoke, and abrasions, yields the most intact and informative samples. Knowledge of the style of the period informs the sampling process, instructing the conservator as to where it is most likely to find color changes or decorative painting. Items that seem out of place

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can be sampled to see where the paint layers match or diverge. The number of paint layers can indicate the approximate age of an element, and show where new materials have been introduced. The layers of paint can also show periods of neglect and deterioration, fading or darkening due to UV or smoke, and it can show a change in what type of paint was used.

PROJECT SPECIFICS AND RESULTS

See the charts below for the colors at each specific location sampled. The first color listed is the original color. Note that some colors are used between buildings, and may be used to assume that buildings of the same color existed during the same time period. The time period of specific layers of paint can then be determined. Munsell colors have been matched to the commercial paint of Benjamin Moore, but can be matched to any color system determined to be best for the application by the design team.

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LIST OF ORIGINAL COLORS FOUND AT EACH LOCATION
Left Column = Munsell Color Right Column = Benjamin Moore Matched Color

1958 Residence	
Butter - 2.5Y 8/4	BM CC Barley 199
Light Tan - 5Y 8/2	BM CC 514 Flowering Herb
Pale Ice Blue - 10B 9/1	BM CP 2128-70 Lily White
Orange Brown - 10YR 7/4	BM CP: 2161-40 Acorn Yellow
Light Peach - 7.5YR 8/4	BM CC 108 Desert View
Garage	
Light Peach - 7.5YR 8/4	BM CC 108 Desert View
Red Earth - 10R 3/4	No Moore Match
White - N9.5/90.0%R	BM RM Bright White
Dark Brown Plum - 10R 2/2	No Moore Match
Saddle Brown - 5YR 3/2	No Moore Match
1938 Residence	
Dark Brown Peach - 7.5YR 2/4	No BMoore Match
Red Earth - 10R 3/4	No Moore Match
Dark Brown Plum - 10R 2/2	No Moore Match
Light Peach - 7.5YR 8/4	BM CC 108 Desert View
Almost White - 5Y 9/1	BM Glacier White OC-37
Comfort Station	
Dark Brown Plum - 10R 2/2	No Moore Match
White - N9.5/90.0%R	BM RM Bright White

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Visitor Center	
Almost White - 5Y 9/1	BM Glacier White OC-37
Dark Brown Plum - 10R 2/2	No Moore Match
Saddle Brown - 5YR 3/2	No Moore Match
Peach Cream - 10YR 9/4	BM CP 2159-50 Wheat field
Light Peach - 7.5YR 8/4	BM CC 108 Desert View
Red Earth - 10R 3/4	No Moore Match
Warm Light Brown - 10YR 8/6	BM CC 144 Honey Burst
Orange Brown - 10YR 7/4	BM CP: 2161-40 Acorn Yellow
Medium Warm Yellow - 2.5Y 8.5/4	BM CC 199 Barley
Light Beige - 5Y 8.5/2	BM HC 93 Carrington Beige

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CHART OF FIRST PAINT LAYERS

Sample #	Location	1st layer (Original)	2nd layer	3rd	Total # of layers
1	1958 Residence, Bathroom Window Trim	Butter 2.5Y 8/4	Light Tan 5Y 8/2	Light Yellow Gray, 5Y 8/1	4
2	1958 Residence Hall Closet Wall	Pale Ice Blue 10B 9/1	Orange Brown 10YR 7/4	White	3
3	1958 Residence Exterior Stucco	Light Peach 7.5YR 8/4			1
4	Garage Exterior Stucco, N Elev	Light Peach 7.5YR 8/4			1
5	Garage Window, Int East Wall	Red Earth 10R 3/4	Dark Brown Plum 10R 2/2	Saddle Brown 5YR 3/2	3
6	Garage Ext Wood Column	Red Earth 10R 3/4	White N9.5/90.0%R	Saddle Brown 5YR 3/2	3
7	1938 Residence Wood Window Header	Dark Brown Peach 7.5YR 2/4	Red Earth 10R 3/4	Dark Brown Plum 10R 2/2	5
8	1938 Residence Ext Stucco, S Elev	Light Peach 7.5YR 8/4			1
9	1938 Residence Ext. Orig Window	Dark Brown Plum 10R 2/2	Almost White 5Y 9/1	Gray Green 7.5GY 8/4	3
10	Comfort Station Interior Window	Dark Brown Plum 10R 2/2	White N9.5/90.0%R	Medium Warm Yellow 2.5Y 8.5/4	3

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11	Visitor Center Museum Addition, Ext Window Frame	Almost White 5Y 9/1	Saddle Brown 5YR 3/2	Dark Brown Plum 10R 2/2	3
12	Visitor Center Museum, Jackson Wing, Brick and Mortar Ext Wall	Peach Cream 10YR 9/4	Light Peach 7.5YR 8/4		2
13	Visitor Center Landmark Wing, Ext Stucco	Peach Cream 10YR 9/4	Light Peach 7.5YR 8/4		2
14	Visitor Center Museum Wing, Ext Rafter	Red Earth 10R 3/4	Dark Brown Plum 10R 2/2	Saddle Brown 5YR 3/2	3
15	Visitor Center Interior Wall	Warm Light Brown 10YR 8/6	Peach Cream 10YR 9/4	Light Peach 7.5YR 8/4	3
16	Visitor Center Landmark Wing, N Int Wall	Orange Brown 10YR 7/4	Peach Cream 10YR 9/4	Light Peach 7.5YR 8/4	3
17	Visitor Center Tower 2nd Fl, N Wall	Medium Warm Yellow 2.5Y 8.5/4	Light Beige 5Y 8.5/2	White N9.5/90.0%R	3
18	Visitor Center Tower 2nd Fl Window Trim	White N9.5/90.0%R			1

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PAINT ANALYSIS FORMS

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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 1			
1958 Residence			
Bathroom Window Trim			
Substrate:	Wood	Top Color:	White

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Butter	2.5Y 8/4	Flat	BM CC Barley
2	Light Tan	5Y 8/2		BM CC 514 Flowering Herb
3	Light Yellow Gray	5Y 8/1		
4	White			
5				
6				
7				
8				



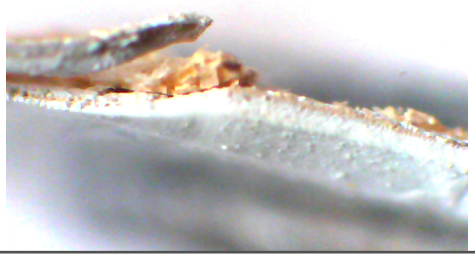
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 2			
1958 Residence			
Hall Closet Wall			
Substrate:	Plaster	Top Color:	White

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Pale Ice Blue	10B 9/1		BM CP 2128-70 Lily White
2	Orange Brown	10YR 7/4		BM CP: 2161-40 Acorn Yellow
3	White			
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 3			
1958 Residence			
Exterior Stucco			
Substrate:	Stucco	Top Color:	Light Peach

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Light Peach	7.5YR 8/4		BM CC 108 Desert View
2				
3				
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 4			
Garage			
Exterior Stucco, N Elev			
Substrate:	Stucco	Top Color:	Light Peach

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Light Peach	7.5YR 8/4		BM CC 108 Desert View
2				
3				
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 5			
Garage			
Window, Int East Wall			
Substrate:	Wood	Top Color:	Saddle Brown

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Red Earth	10R 3/4		No Moore Match
2	Dark Brown Plum	10R 2/2		No Moore Match
3	Saddle Brown	5YR 3/2		No Moore Match
4				
5				
6				
7				
8				



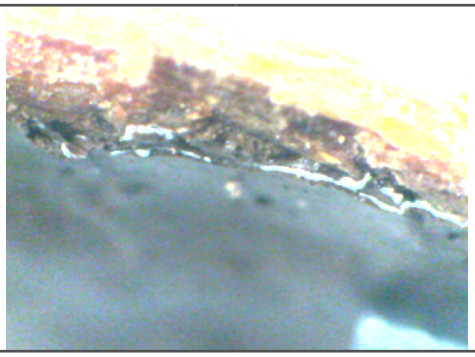
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 6			
Garage			
Ext Wood Column			
Substrate:	Wood	Top Color:	Saddle Brown

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Red Earth	10R 3/4		No Moore Match
2	White	N9.5/90.0 %R		BM RM Bright White
3	Saddle Brown	5YR 3/2		No Moore Match
4				
5				
6				
7				
8				



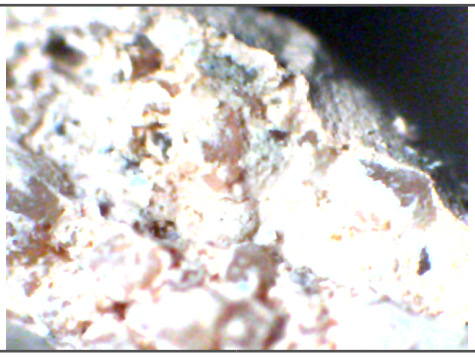
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 7			
1938 Residence			
Wood Window Header			
Substrate:	Wood	Top Color:	Dark Brown

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Penetrating Varnish (Primer)			
2	Dark Brown Peach	7.5YR 2/4		No BMoore Match
3	Red Earth	10R 3/4		No BMoore Match
4	Dark Brown Plum	10R 2/2		No BMoore Match
5	Dark Brown			
6				
7				
8				



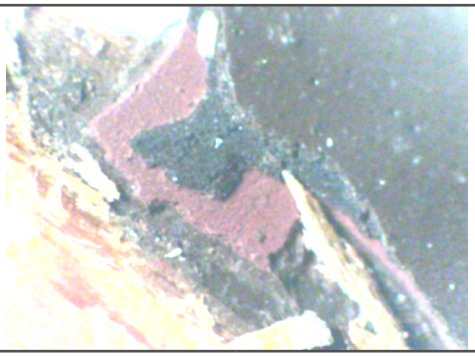
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 8			
1938 Residence			
Ext Stucco, S Elev			
Substrate:	Wood	Top Color:	Light Peach

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Light Peach	7.5YR 8/4		BM CC 108 Desert View
2				
3				
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 9			
1938 Residence			
Ext. Orig Window			
Substrate:	Wood	Top Color:	Gray Green

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Metallic Silver			
2	Dark Brown Plum	10R 2/2		No BMoore Match
3	Almost White	5Y 9/1		BM Glacier White OC-37
4	Gray Green	7.5GY 8/4		
5				
6				
7				
8				



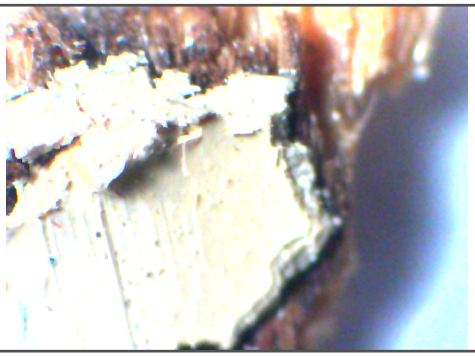
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 10			
Comfort Station			
Interior Window			
Substrate:	Wood	Top Color:	Medium Warm Yellow

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Dark Brown Plum	10R 2/2		Glacier White OC-37
2	White	N9.5/90.0 %R		BM RM Bright White
3	Medium Warm Yellow	2.5Y 8.5/4		
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 11			
Visitor Center			
Museum Addition, Ext Window Frame			
Substrate:	Wood	Top Color:	Dark Brown Plum

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Almost White	5Y 9/1		BM OC 37 Glacier White
2	Saddle Brown	5YR 3/2		No Moore Match
3	Dark Brown Plum	10R 2/2		No Moore Match
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 12			
Visitor Center			
Museum, Jackson Wing, Brick and Mortar Ext Wall			
Substrate:	Wood	Top Color:	Light Peach

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Peach Cream	10YR 9/4		BM CP 2159-50 Wheat field
2	Light Peach	7.5YR 8/4		BM CC 108 Desert View
3				
4				
5				
6				
7				
8				



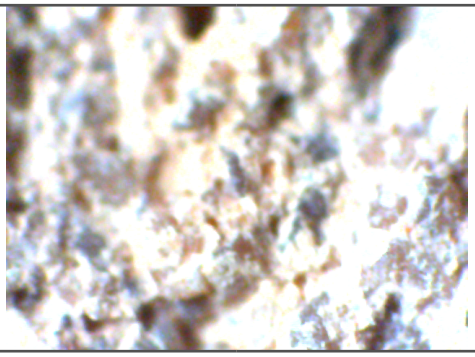
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 13			
Visitor Center			
Landmark Wing, Ext Stucco			
Substrate:	Stucco	Top Color:	Light Peach

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Peach Cream	10YR 9/4		BM CC 108 Desert View
2	Light Peach	7.5YR 8/4		BM CC 108 Desert View
3				
4				
5				
6				
7				
8				



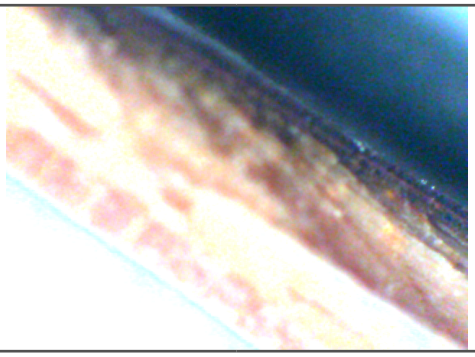
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 14			
Visitor Center			
Museum Wing, Ext Rafter			
Substrate:	Wood	Top Color:	Saddle Brown

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Red Earth	10R 3/4		No Moore Match
2	Dark Brown Plum	10R 2/2		No Moore Match
3	Saddle Brown	5YR 3/2		No Moore Match
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 15			
Visitor Center			
Interior Wall			
Substrate:	Plaster	Top Color:	Light Peach

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Warm Light Brown	10YR 8/6		BM CC 144 Honey Burst
2	Peach Cream	10YR 9/4		BM CP 2159-50 Wheat Field
3	Light Peach	7.5YR 8/4		BM CC 108 Desert View
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 16			
Visitor Center			
Landmark Wing, N Int Wall			
Substrate:	Plaster	Top Color:	White

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Orange Brown	10YR 7/4		BM CP: 2161-40 Acorn Yellow
2	Peach Cream	10YR 9/4		BM CP: 2159-50 Wheat Field
3	White	N9.5/90.0 %R		
4				
5				
6				
7				
8				



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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 17			
Visitor Center			
Tower 2nd Fl, N Wall			
Substrate:	Wood	Top Color:	White

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	Medium Warm Yellow	2.5Y 8.5/4		BM CC 199 Barley
2	Light Beige	5Y 8.5/2		BM HC 93 Carrington Beige
3	White	N9.5/90.0 %R		
4				
5				
6				
7				
8				



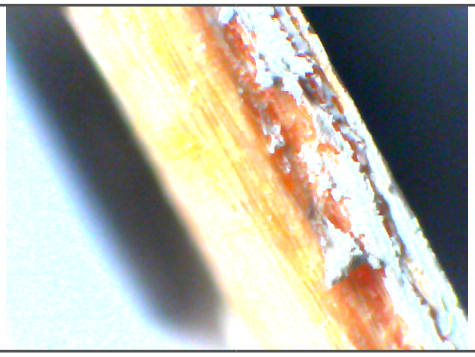
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PAINT ANALYSIS FORM

Project Name:	SCBL		
Project Location:	Scotts Bluff National Monument		
Sampled by:	Anderson Hallas		
Analyzed by:	BEE		

Sample Description: 18			
Visitor Center			
Tower 2nd Fl Window Trim			
Substrate:	Wood	Top Color:	White

LAYER #	COLOR DESCRIPTION	MUNSELL #	GLOSS LEVEL	NOTES
1	White	N9.5/90.0 %R		BM RM Bright White
2				
3				
4				
5				
6				
7				
8				



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BUILT ENVIRONMENT EVOLUTION

PRESERVING THE PAST TRANSFORMING TOMORROW

SCBL

Scottsbluff National Monument
Nebraska

STUCCO AND PLASTER REPORT

October 9, 2015

Prepared for
Anderson Hallas Architects
By
Built Environment Evolution

PO BOX 21433 BOULDER, CO 80308 303.562.5872

A BRIEF HISTORY OF PLASTER

Plaster has been with a part of structural interiors for millennia, the oldest traces of which were found in Anatolia and Syria and dated at approximately 9000 years old. The Egyptians used gypsum plaster, as did the Greeks. Theophraste (372-287 BC) described the Syrian and Phoenician methods of plaster preparation in detail. Plaster was used on interiors to smooth over masonry or wood surfaces, and allow for decoration such as frescos, and paint. Plaster became known for fire protection, and as cities began to grow into the urban centers we know today, fire became a serious issue. Citywide fires, such as the fire of London in 1666, made plaster a requirement of all interiors. In the 1700's, Paris was the capital of the trade, with large deposits of Gypsum located in close proximity to the city. "Plaster of Paris" was manufactured and exported to the aristocracies of Europe. Different surface treatments were developed and skilled craftsmen were employed to create decorative plasters for ceilings, moldings, and medallions. Lime plaster, a mixture of lime putty, sand, hair and water, was used for scratch coat, brown coat and finish coat. Lime plasters are more impervious to water damage, and have a stronger compression strength than gypsum plaster, but lime plasters are also more brittle and can take up to one year to cure. Gypsum is softer, and dries within two to three weeks. Lime plasters became less common in the US at the turn of the century.

REPAIR WORK WITH PLASTER

Plaster can have many issues with the substrate that can cause damage. Such issues may include structural settlement, lath movement, different shrinkage rates between the plaster layers, water damage, improper curing, and poor workmanship. Once the problem has been identified and corrected, the plaster can be repaired. If poor workmanship or poor adhesion between layers is the issue, it is very difficult to save the original plaster, and it is possible that comprehensive replacement may be required. This is rare, and often cracks and missing plaster can be easily repaired. A skilled craftsman can recognize cracks that require patching compound verses cracks that will need to be cut out, cleaned, and repaired with lath or mesh.

Plasters are a significant part of the materials that make up a historic structure. The information contained in the contents, application, and surface treatments can inform a conservator about the history of the

structure. Plaster has many different mixes, dependent upon the end use and the knowledge of the craftsperson. Mixes have been found with lime to sand or gypsum to sand ratios that can vary from 1:1 to 1:6 on the same wall. Analysis of the mix before specifications are made allows for the repairs to function and the historic fabric to remain intact. Plasterwork as it was historically used and applied is quickly becoming a lost art. If possible, historic plasters are well worth saving. If the plaster is beyond saving, documentation of the surface treatment and plaster mix is advised to inform the restoration project.

PLASTER TERMS

SCRATCH COAT: The first base coat put on wood or metal lath. The wet plaster is "scratched" with a scarifier or comb to provide a rough surface so the next layer of base coat will stick to it.

BROWN COAT: The brown coat is the second application of wet, base-coat plaster with wood lath or metal systems. With gypsum board lath (rock lath, plasterboard), it is the only base coat needed.

FINISH COAT: Pure lime, mixed with about 35 percent gauging plaster to help it harden, is used for the very thin surface finish of the plaster wall. Fine sand can be added for a sanded finish coat.

GYPSUM: Once mined from large gypsum quarries near Paris (thus the name plaster of Paris), gypsum in its natural form is calcium sulfate. When calcined (or heated), one-and-a-half water molecules are driven off, leaving a semi-hydrate of calcium sulfate. When mixed with water, it becomes calcium sulfate again. While gypsum was used in base-coat plaster from the 1890s on, it has always been used in finish coat and decorative plaster. For finish coats, gauging plaster was added to lime putty; it causes the lime to harden. Gypsum is also the ingredient in moulding plaster, a finer plaster used to create decorative moldings in ornamental plasterwork.

LIME: Found in limestone formations or shell mounds, naturally occurring lime is calcium carbonate. When heated, it becomes calcium oxide. After water has been added, it becomes calcium hydroxide. This calcium hydroxide reacts with carbon dioxide in the air to recreate the original calcium carbonate.

A BRIEF HISTORY OF STUCCO

Various stucco renders have been used for millennia, with the word originating in Germany to describe a render form the Middle Ages to act as a protective coat on exterior or interior walls. Sometimes used to imitate stone, or to create a very smooth surface. During the Victorian era, stucco became popular to smooth exteriors of structures. All stuccos use multiple layers, though formulas vary greatly with tradesmen, location, and final use. Traditionally, common stucco was made with hydraulic lime, sand and hair. Marble dust could be used instead of sand to make a finer, smoother render, often for interior applications. Other types of crushed stone could be added for color and a stone-appearance. Additional additives could include brick dust, or fly ash (pozzolanic additive to strengthen the mix), linseed oil could be added to slow drying, gypsum could replace lime, and newer renders could have Portland cement added. A thick base coat, or scratch coat, was used first to smooth over rough surfaces, which was then raked or scratched, between 1 and 4 additional layers were added to smooth the surface. Struck lines could have been added to imitate ashlar stone.

REPAIR WORK WITH STUCCO

Stucco requires maintenance. Moisture penetration from lack of maintenance is the most common cause of failure. The most common maintenance mistake is to have a lime-based stucco that has been repaired with Portland cement, causing a vapor barrier, or a difference in tensile strength, both of which can cause cracking. Water penetration can cause a loss of adhesion, either between the stucco coats or from the substrate. Visible signs of water penetration include salt efflorescence, visible damp zones, staining, biological growth, hairline cracks, larger cracks, patches of friable material, and bulging. With time, any visible sign can lead to comprehensive failure. Modern paints can also cause a vapor barrier. This will typically show as small hairline fractures in the stucco.

With conservation work it is necessary to document the area before, during, and after repair work. Remove inappropriate materials and methods of repair and replace with the appropriate stucco/render. Removal should be carried out only if the original substrate is not at risk. Defective areas of original that cannot be saved can be cut out. Salt efflorescence and biological growth may be dry brushed and removed

from all surfaces. Original materials should always be used as substituting modern materials for the original will cause more issues than it will solve. If the original stucco has survived a hundred years or more, the original has proven the ability to function. Suitable repairs and thorough maintenance can ensure that the original stucco will function for another hundred years.

CHARTS

The charts below illustrate the various characteristics and make up of the samples collected.

Table 1: Description of Sample location on Structure

SAMPLE #	LOCATION
1	Visitor Center Exterior Stucco
2	Visitor Center Exterior Stucco at Site Wall
3	Visitor Center Plaster Sample

Table 2: Description before testing, Hardness and Color

SAMPLE #	HARDNESS	COLOR
1	Medium Hard	Peach
2	Medium Hard	Dark Gray
3	Medium Soft	Pale Gray

Table 3: Aggregate Shape and Gradation

SAMPLE #	AGGREGATE SHAPE	AGGREGATE GRADATION
1	Sub angular	Very Fine - Medium
2	Sub angular	Very Fine - Medium
3	Sub angular	Very Fine - Coarse

Table 4: Color of Fines

SAMPLE #	COLOR OF FINES
1	10YR 9/1
2	2.5Y 9/1
3	5YR 7/1

Table 5: Color of Sands

SAMPLE #	COLOR OF SANDS
1	10YR 9/1
2	2.5Y 8/1
3	5YR 6/1

Table 6: Total Percentages

SAMPLE #	% LIME	% FINES	% SANDS	% PORTLAND	% OTHER
1	5	8	70	5 -16.99	0
2	5	7	70	5 - 16.99	0
3	3	9	68	5 - 19.99	10(?) Gypsum

CONCLUSIONS

Anderson Hallas Architects collected and submitted three different samples from Scottsbluff National Monument, Nebraska, to the BEE laboratory. The samples were tested using acid digestion. Each sample, labeled 1, 2, and 3, had a hydrochloric acid wash test applied, used to determine the lime, fines and sands ratios. Sands and fines are then matched for size, color and shape so the project mason may replicate the results. The test is designed to assess the lime content, so an exact determination of Portland content is not possible. Adjustment of the Portland content in the field by a qualified mason is acceptable.

All samples were different, although the lime content was similar for all samples. All samples had different colored sands and fines, although Sample 1 and 2 were similar. All samples appear to have some Portland cement added to the lime mortar mix. Table 6, above, shows the final percentages for the individual samples.

Sample 1: The sample is peach in color with a pigment added. Portland cement appears to have been added to the lime mortar mix. Replication of historic mortar mix is 1 part hydrated lime, 1 part Portland cement, to 7 parts sand. Match color, size, shape and grade of sands for best match. Pigment is required for an exact match, mock-up for an accurate match is required.

Sample 2: The sample has a medium gray color with Portland cement added to the lime mortar mix. 1 part Portland cement, to 7 parts sand. Match color, size, shape and grade of sands for best match.

Sample 3: The sample is a pale gray color with little to no lime added to the mortar mix. This is an uncommon result for plaster, indicating that the plaster is from a later time period, and is a gypsum plaster, not lime. The strength of the plaster indicates a Portland cement additive, but the quantity is undetermined. No recommendation can be made. Replication of historic mortar mix may be similar to 2 parts gypsum, 1 part Portland cement, to 3 parts sand. Match color, size, shape and grade of sands for best match.

A mock up for final color match is recommended.

Additional testing can be requested using the XRF Spectrometer, to identify the presence of gypsum and approximate proportions. Contact BEE for additional services.

BUILT ENVIRONMENT EVOLUTION

PRESERVING THE PAST TRANSFORMING TOMORROW

STUCCO ANALYSIS FORM

Project: SCBL	Location: Scotts Bluff National Monument, NE
Sample #: 1	
Date Taken: July 2015	Date Examined: Oct 1 - 5
By: AH Architects	By: BEE - NFL
Sample description before testing: Peach Color, Medium Hard, Subangular Aggregate, Very Fine to Medium.	

1	5	Weight of Sample
2	4.5	Volume of Sample
3	0.07	Liters of CO2 released = V. Original Reading 750ml. Final reading 820ml.
4	0.052836	Corrected volume is V corrected for barometric pressure and temperature. Corrected Volume = V x 620/760 x 273/295 = V x 0.816x0.925
5	0.00235875	CO2 = Moles CaCO3 = M = V (corrected)/22.4
6	0.235875	Grams CaCO3 = M x 100 (molecular weight of CaCO3 is 100).
7	10YR 9/1	Fines Color
8	10YR 9/1	Sands Color
9	0	Hair or fiber present; type:
10	2.4	Weight of original filter paper
11	2.8	Weight of filter paper with fine
12	0.5	Cc's of fines
13	111.0	Weight of beaker
14	114.5	Weight of beaker with sand
15	3.2	Volume of sand
	CONCLUSIONS	
16	0.05	Lime parts per weight
17	0.05	Lime parts per volume
18	0.08	Fines parts per weight
19	0.09	Fines parts per volume
20	0.70	Sands parts per weight
21	0.71	Sands parts per volume

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BUILT ENVIRONMENT EVOLUTION

PRESERVING THE PAST TRANSFORMING TOMORROW

STUCCO ANALYSIS FORM

Project: SCBL	Location: Scotts Bluff National Monument, NE
Sample #: 1	
Date Taken: July 2015	Date Examined: Oct 1 - 5
By: AH Architects	By: BEE - NFL
Sample description before testing: Dark Gray Color, Medium Hard, Subangular Aggregate, Very Fine to Medium	

1	5	Weight of Sample
2	4.5	Volume of Sample
3	0.08	Liters of CO2 released = V. Original Reading 750ml. Final reading 830ml.
4	0.060384	Corrected volume is V corrected for barometric pressure and temperature. Corrected Volume = V x 620/760 x 273/295 = V x 0.816x0.925
5	0.00269571	CO2 = Moles CaCO3 = M = V (corrected)/22.4
6	0.26957143	Grams CaCO3 = M x 100 (molecular weight of CaCO3 is 100).
7	2.5Y 9/1	Fines Color
8	2.5Y 8/1	Sands Color
9	0	Hair or fiber present; type:
10	2.3	Weight of original filter paper
11	2.65	Weight of filter paper with fine
12	0.5	Cc's of fines
13	113.5	Weight of beaker
14	116.0	Weight of beaker with sand
15	3.2	Volume of sand
	CONCLUSIONS	
16	0.05	Lime parts per weight
17	0.06	Lime parts per volume
18	0.07	Fines parts per weight
19	0.08	Fines parts per volume
20	0.70	Sands parts per weight
21	0.71	Sands parts per volume

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BUILT ENVIRONMENT EVOLUTION

PRESERVING THE PAST TRANSFORMING TOMORROW

PLASTER ANALYSIS FORM

Project: SCBL	Location: Scotts Bluff National Monument, NE
Sample #: 1	
Date Taken: July 2015	Date Examined: Oct 1 - 5
By: AH Architects	By: BEE - NFL
Sample description before testing: Pale Gray Color, Medium Soft, Subangular Aggregate, Very Fine to Coarse	

1	5	Weight of Sample
2	4.5	Volume of Sample
3	0.05	Liters of CO2 released = V. Original Reading 750ml. Final reading 800ml.
4	0.03774	Corrected volume is V corrected for barometric pressure and temperature. Corrected Volume = V x 620/760 x 273/295 = V x 0.816x0.925
5	0.00168482	CO2 = Moles CaCO3 = M = V (corrected)/22.4
6	0.16848214	Grams CaCO3 = M x 100 (molecular weight of CaCO3 is 100).
7	5YR 7/1	Fines Color
8	5YR 6/1	Sands Color
9	0	Hair or fiber present; type:
10	2.5	Weight of original filter paper
11	2.95	Weight of filter paper with fines
12	0.5	Cc's of fines
13	112.0	Weight of beaker
14	115.4	Weight of beaker with sand
15	3.2	Volume of sand
	CONCLUSIONS	
16	0.03	Lime parts per weight
17	0.04	Lime parts per volume
18	0.09	Fines parts per weight
19	0.10	Fines parts per volume
20	0.68	Sands parts per weight
21	0.75	Sands parts per volume

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Appendix G: 2002 Visitor Center HSR Introduction

Statement of Purpose

The purpose of this document is to provide advance planning for the eventual rehabilitation of the Scotts Bluff Visitor Center. The existing visitor center is significant with respect to its association with early interpretation of Oregon Trail heritage and the structure's architectural design. The structure has value with respect to the site, and therefore should be incorporated into any future design proposals.

Project Team Members

Information and management assistance:
Scotts Bluff National Monument
Valerie Naylor, Superintendent
Dean Knudsen, Park Historian
Robert Hamann, Facility Manager

Collections management consultation:
Carolyn Wallingford, Curator, Midwest Archeological Center

Archeological issue consultation:
Bruce Jones, Archeologist, Midwest Archeological Center

Cultural landscape consultation:
Sherda Williams, Historical Landscape Architect, Midwest Regional Office

Structural investigation:
Tom Fitzpatrick, Structural Engineer, Fitzpatrick Structural Engineers, Ann Arbor, Michigan

Adobe consultant:
Jake Barrow, Restoration Specialist, Intermountain Region, National Park Service

Investigation History and Methodology

No comprehensive architectural study has previously been completed for the Visitor Center, although various research documents and databases have outlined major construction developments and identified problems. In 1976, Scotts Bluff was included in a study of National Park Service visitor centers. That study identified internal and external visitor congestion areas, and minor maintenance challenges, but offered few viable recommendations. About that same time a Master Plan being developed by the Denver Service Center stirred controversy by suggesting that the present visitor center be demolished and that function be relocated near the periphery or outside of the park to return the landscape to its natural state. While the recommendation to demolish the structure obviously went unfulfilled, that same document also identified the absence of a decent auditorium as a major interpretive weakness, and the crowded conditions within the building.

The 1983 Scotts Bluff administrative history authored by National Park Service Historian Ron Cockrell, succinctly sequences the above-mentioned studies and plans, and naturally includes Visitor Center construction history. A Determination of Eligibility study, approved in 1995, generally reiterates the structural history presented by Cockrell, but for the first time analyzes the characteristic style of the building and identifies its significance in relationship to the interpretation of the Oregon Trail. Approved in 1996, a cultural landscape Determination of Eligibility study contains relevant justification on the integrity of the structure as a component of the development complex.

The park's revised General Management Plan, approved in 1998, offers a recommendation to relocate administrative and maintenance functions away from the park to alleviate overcrowded conditions at the Visitor Center. The recommendation indicates the two vacated buildings are then to be rehabilitated for use as interpretive exhibits.

This report relies heavily on previously-mentioned studies and construction drawings for primary information on building history and development. This study proceeds a step further by identifying significant building features, condition and functional problems, and building code and handicap accessibility violations through a thorough inspection.

Public restrooms are located in a small adobe structure separate from the Visitor Center. However, because the public restrooms are an integral part of the visitor services and physically located very close to the Visitor Center, the public restroom building is specifically included within this analysis. All other structures within the complex are addressed only in terms of their indirect impact on the administrative operation of the Visitor Center.

Appendix H: 2002 Visitor Center HSR Part 2 Treatments

*Note - This text is unedited from the 2002 HSR. For updated treatment recommendations see the "Visitor Center & Comfort Station (HSR update) - Part 2: Treatment and Use" section within the body of this report.

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PART TWO: TREATMENT AND USE

DESIGN PROGRAM

Site

Any alterations made to the Visitor Center should be compatible with the complex of buildings. The view of the Visitor Center from the bluff overlook and trails must also be considered. When viewed from the trail, distance and the broad natural vistas diminish the clarity and perception of massing and detail of the complex.

Building

The Visitor Center should appear unified as visitors approach the site from the highway, enter the parking lot, and park their vehicles. Any new additions should stay within the footprint of the existing building and amphitheater. Any alterations or additions to the building should be in character and scale with the heavy massing, simple lines, and detailing of the existing Spanish Colonial structure. Exterior fenestration, texture, and colors of any additions should also closely match that of the existing structure, yet be distinguishable from the older structure. Attaching new constructions to adobe facades should be avoided as much as possible to ease detailing challenges around the fragile adobe.

Interior View

A view of the bluffs should be provided from the interior, provided that natural light does not interfere with conservation of light-sensitive exhibits.

Entrance

The existing south doorway should be retained as the primary visitor entrance. The tower and arched doorway serve to draw visitor attention to the primary entrance.

Visitor Contact

The visitor contact counter should be placed in an area visible to the visitor entering the lobby. The counter should have a view into the sales and exhibit area, and access to the theater. Queues at the counter should not impede general circulation patterns. All fee transactions should take place at the counter without having to move to another room. Floor and wall space should be provided for the park passport stamp, brochures, and informational displays. Seating for weary or waiting visitors should be provided in the vicinity of the lobby and visitor contact counter.

Exhibit Rooms

Exhibit room area should remain at about the existing 1,900 square feet total exclusive of its present dual use as theater and sales. Original trussed ceilings in existing exhibit rooms 102 and 110 should be exposed to view. The original ceiling height in room 115 may be re-established. Windows may be exposed and restored depending upon use of the rooms. Should new exhibit rooms be constructed, the area should be open to accommodate new exhibit design. Exhibit spaces should be uniformly heated and cooled to assist in protection of displayed materials. Lighting should enhance visitor enjoyment of the exhibits yet provide visual security of objects on display.

Theater

A room solely dedicated for use as a theater should be provided. The theater should seat at least 75 persons, each of whom have an unobstructed view of the screen. The theater should be acoustically isolated from adjacent noisy areas. Seats may be unfixed so the space can be flexibly used for

occasional special events or meetings. Adjacent space should be set aside for storage of audio visual equipment.

Sales
If possible, a space should be dedicated for the sales area only. The sales office and storage can be segregated from the sales area, but should be readily accessible to the sales area. The visitor contact counter will include a register for sales items. Therefore, sales should be located near the visitor contact area for security purposes. Sales office and storage should be securable.

Amphitheater
Some form of outdoor meeting place has been in association with the Visitor Center since construction of the first addition in 1938. The trend should continue to provide visitors with a place for at least 100 persons to comfortably gather for special events and presentations. The place should have a view of the bluffs to the north and west.

Public Restrooms
Accessible public restrooms should be provided within the visitor center. The restrooms should be located as close as possible to the front entrance. Each restroom should include at least three toilet fixtures, two lavatories, and a baby changing station.

Visitor Services
Vending machines should be isolated from all interior public spaces to prevent accidental spills in sales and exhibit areas. Recycling and trash cans should be located within the vending machine area. The existing public pay telephone should be relocated to an accessible place out of primary circulation pathways.

First Aid
Space should be dedicated as a public first aid station located near an entrance but not within a secure area or private office.

Offices
It is assumed for this design exercise that offices for the secretary, administrative officers, superintendent, chief of maintenance, and maintenance mechanic leader will remain in their existing locations or be moved outside of the park as directed by the GMP. Permanent office spaces should be located on the ground floor to ready access and support to the exhibit and visitor contact areas. All Visitor Center office spaces should at least accommodate a desk and/or computer desk, work table, file cabinets, book shelves, and space for general storage. The ranger office (104) should remain in its existing, pivotal location. Each office should have adequate electrical power and phone terminals. Artificial lighting and environmental controls meet contemporary standards. The Visitor Center should contain the following office spaces:

Park ranger office (104)
Chief ranger office
Resource management specialist
Interpreter office
Park historian

Office Storage Room
A room or space should be provided to house a photocopier, and general office supplies, files, and equipment. The space should be readily accessible to the offices.

Seasonal Locker Room
An area should be designed to accommodate at least eight summer seasonals. The space should include lockers for each seasonal for personal items. The space may include a desk. Costume storage should be adjacent to

the locker room, but the locker room can be isolated from the general office area.

Conference Room
A conference room accessible to all employees should be provided. The room should be able to comfortably seat all park employees for meetings and training. A table should be provided in the middle of the room for meetings and presentations. Wall space should be dedicated for a screen and blackboard. The conference room can double as a lunch room.

Library
A space should be dedicated for the shelving of the existing collection of 5,000 books, with expansion capacity for 1,000 additional volumes. A reading/layout table, a desk for library computer catalog, the email server computer desk, desk for a microfilm reader, a map file, and one file cabinet should be accommodated within the room. The library should be accessible to approved researchers, yet be secure. The library should have environmental controls to conserve the materials.

Collections Storage
Collections storage space should be expanded to relieve overcrowding and provide for additional future acquisitions. The existing storage area (112) may remain in its present location, although another new basement area should be considered. The existing area is secure and appears to be in an ideal environment to conserve artifacts. However, expansion of the existing space may be difficult due to the quantity of existing ducts and pipes at the ceiling. A work space that includes a layout table and computer desk should be located adjacent to the collections storage room. Collections storage should have a dedicated mechanical system, and fire suppression system.

Employee Services
An accessible lunch room with integral or adjacent kitchenette should be provided for employees. The lunchroom may be sized to accommodate employee meetings. All employee restrooms should be accessible, and should be located as close as possible to employee offices. A unisex restroom is acceptable although the design should strive for separate men's and women's rooms.

Janitor Closet
A small space should be dedicated near the public restrooms for a slop sink and storage of cleaning products.

General Storage
Ample space should be provided for the storage of folding chairs and tables, interpretive props, office supplies, the gun safe, and other items.

Mechanical System
Alternatives should be explored to provide a multiple-zone mechanical system for the Visitor Center. The system should provide uniform heating and cooling throughout the designated zones, especially within the theater and exhibit rooms. Space should be provided to accommodate mechanical equipment. Consideration should be given toward installing a ground source heat pump to heat and cool the structure. The closed loop system would operate by extracting energy from deep holes bored into the ground. No exterior condenser units are required, thus eliminating a visual intrusion. Ground source heat pump systems typically halve space heating and cooling energy consumption, but installation costs are approximately twice that of conventional systems. The anticipated system life is over 50 years.

Fire Suppression
The entire interior of the building should be protected with a fire suppression system. Pipes and heads within restored public spaces should be concealed as much as practically possible.

Lighting
Artificial lighting that enhances public spaces and exhibits should be designed. Existing historic fixtures should be retained. Lighting within the lobby (101) should be elevated to provide a transition for visitors entering the building from bright sunlight.

Security Systems
Intrusion and fire detection and alarm systems should be installed throughout the structure.

Lightning Protection
A certified lightning protection system should be installed on the building.

Accessibility
All primary entrances, the visitor contact counter, exhibit rooms, sales area, restrooms, visitor and employee services shall be accessible. All new offices should be accessible, and existing offices should be made accessible if possible. The park ranger office (104) should be made accessible.

Life Safety
All existing and new spaces within the Visitor Center should conform to contemporary building and egress codes.

Comfort Station
The existing Comfort Station should be renovated.

New Space Allocation

The new visitor center should include at a minimum the following space allocations.

Function	Area (sf)
Visitor Services	
Lobby (101)	190
Visitor Contact Station Area	200
Theater (75 persons)	530
Exhibit	1,900
Public Restrooms & Janitor Closet	400
Vending Area	50
First Aid	10
Subtotal	3,280
Sales	
Sales Area	240
Sales Office	100
Sales Storage	240
Subtotal	580
Administration	
Park Ranger Office (104)	110
Chief Park Ranger Office	140
Resource Management Office	140
Historian Office	140
Seasonal Lockers/Desk	220
Library	400
Conference/Break Room	220
Collections Storage	400
Employee Restroom	70
General Storage	1,000
Subtotal	2,870
Other	
Amphitheater (100 persons)	1,000
Mechanical	600
Circulation	800
Subtotal	2,400
Totals	
Visitor Center	7,920
Amphitheater	1,000

TREATMENT ALTERNATIVES

The following alternatives address programmatic and building code requirements for the Visitor Center. The intent of these schematic designs is to conceptually explore potential alternatives with regard to site and building circulation and spatial adjacencies within the context of implied physical limitations and historic preservation principles. Upon selection of a specific alternative concept, or ultimate treatment, that alternative will be more fully developed in the following chapter.

Alternative 1 addresses recommendations put forth by the approved General Management Plan for use of other extant structures rather than construction of new buildings or additions. [63] The Alternative 2 investigates a core addition for the Visitor Center building that essentially infills space between the existing wings. Alternatives 3 and 4 explores the concept of new wing additions encompassing a central courtyard. In addition two options are posited for each of Alternatives 3 and 4 to show a range of possibilities.

Each of the alternatives is briefly described and analyzed. In addition, immediately-known special construction is itemized, and followed with a developmental and construction cost estimate. These Class 'C' estimates are based upon accepted year 2000 costs per square foot, and are intended as a comparative guide to selection of an alternative.

[63] The general management plan team did not include an architectural consultant, nor was the need to include such a discipline on the team ever indicated as a result of the agency's reviews of any phase of this plan's development, from the initial Project Agreement to the Final GMP/EIS. This situation conceivably resulted in a number of incorrect assumptions concerning code compliance, site circulation and historic preservation principles during development of the recommendation.

Treatment Alternative 1

Expand Exhibits Into Other Buildings

Description

This alternative reflects the park's current general management plan recommendation that administrative and maintenance functions be moved off site and the resulting vacated buildings be rehabilitated for use as interpretive space. The recommendation gives no specifics as to how the present buildings will be used or altered to perform a new function. It is assumed that exhibits would be located within portions of the existing visitor center and the maintenance shop.

This alternative assumes that the first floor of the present Visitor Center would be rehabilitated. The visitor contact counter and sales would be located in room 101, visitor restrooms in the Jackson Wing (115), and the theater would remain in its present location in the Landmark Wing. Collections storage would remain in the basement, but all other basement spaces would revert to general storage and mechanical rooms. The present administrative building would be used as office space and the maintenance facility would be rehabilitated as exhibit space. Ample space available in the maintenance building would provide for more than the required area for exhibits and additional mechanical and storage space.

Analysis

Additional space provided by the administration and maintenance buildings would provide more space than required by the program. Continued use of all existing structures rather than adding a new addition or structure to attain space requirements satisfies building preservation practice. However, several disadvantages are noted with this alternative.

- Site circulation confusion and pedestrian danger would be greatly increased. Much more frequent bluff road crossings by visitors traveling from the Visitor Center building to other structures is not recommended.
- Locating the visitor program within two buildings would cause confusion for visitors navigating the site.
- Exhibit security would be more difficult to attain by locating exhibits within two structures. Either more employees would be deployed within the structures or a sophisticated visual monitoring system would be installed.
- Extensive work would be required to rehabilitate the present administrative and maintenance buildings for office and exhibit space respectively. The administrative office was constructed as a residence with small rooms. The maintenance facility is essentially a windowless, unheated, shed-roof garage with large garage doors. Both of these structures are principally constructed of load-bearing adobe which would present challenges to create new required wall penetrations.
- Anticipated radical rehabilitation of these two structures for use as exhibit space could impact a National Register determination for them. The complex of buildings is not currently listed on the National Register.
- Basement and sunken office area remain inaccessible due to the difficulty of installing an elevator.
- Maintenance and administration space would need to be constructed in a secluded area on existing park land or leased elsewhere.

Special Construction

- The condition and structural reliability of the maintenance shop walls is presently unknown.
- Adaptability of the maintenance shop for use as exhibit rooms.
- Multi-zone ground source heat pump HVAC system in Visitor Center, Maintenance Facility, and Administrative Office.

Cost Estimate – Alternative 1

The following Class 'C' estimate reflects rehabilitation of the Visitor Center, Administrative Office, and Maintenance Facility for use as exhibit, theater, sales, and ranger/interpretive office space. Costs to construct new office and maintenance facilities within another area of the park is included as an add-on figure. Successfully leasing existing space within Scottsbluff and Gering area that satisfies program requirements is debatable given the limited availability of suitable space and the propensity of owners to build new space rather than lease it. A market analysis would need to be completed to determine long-term costs to lease space constructed to park specifications, assuming that land and buildings outside of the park cannot be purchased by policy. Costs to move administrative and maintenance functions to another location are not included within this cost analysis.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
Visitor Center	5,200	154	$801,000
Administrative Office	755	154	116,000
Maintenance Facility	3,825	184	704,000
Ground source heat pump	9,780	6	59,000
Old Public Restroom	190	154	29,000
Site Work			150,000
Subtotal (construction)			$1,859,000
Architectural design (A/E Tit. 1&2)			
(HSR, exist. cond. dwgs., add 27%)			502,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibits incl. Design	2,200	350	770,000
Subtotal			$1,317,000
Total			**$3,176,000**
Approximate cost to construct new maintenance and administration facility within park boundaries, add:			
	4,500	184	$828,000

Treatment Alternative 2

Construct Core Addition

Description

This alternative features a new addition that would generally infill the space between the Visitor Center wings that is now occupied by the amphitheater. Visitor contact and sales would be placed in room 102, sales in the Jackson Wing (115), and a theater in the Landmark Room (110). New restrooms would be constructed within the addition. Exhibits and primary staff offices would be placed at the first floor of the new addition where they would offer easier access to the public and a view of the bluffs to the north from the interior. The basement would be used for some offices, employee break room, collections and general storage, and mechanical space. Collections storage would be expanded to encompass the entire basement area beneath the theater. Both levels would be accessible by elevator.

The sunken office area would be removed and the floor level raised to the first floor level. Most if not all of the roof system above these offices would need to be removed to provide for a new addition roof.

A small outdoor area enclosed by a masonry garden wall would be located north of the new addition. The outdoor area would be accessible to visitors from the exhibit area. The sunken offices (112 and 113) would be replaced with new space at the same floor level as the first floor. The existing public restroom building would be rehabilitated for use as a vending area and storage.

Analysis

This alternative offers advantages in circulation since the entire visitor experience is contained under one roof in close proximity to the visitor contact desk. The new addition would feature a single large exhibit space rather than a series of galleries as now exists. Several disadvantages are noted for this alternative:

- The large block of new construction would detract from the linear, Spanish colonial design that currently exists.
- The new addition would be seen from the bluff trails and possibly from the road.
- It may be technically challenging to integrate new construction with the existing building, particularly at the roof and adobe walls.
- Construction of the new addition eliminates the chance to provide an outdoor area sheltered by the structure as occurred with Spanish colonial structures. A new outdoor area would need to be fenced outside of the existing building footprint.
- The office addition including walls and roof would be totally demolished.
- Portals would need to be cut through fired brick and adobe walls to provide new circulation paths and means of egress.

Special Construction

- Demolition of existing sunken office area including foundation and roof systems.
- Integration of new addition to adobe-portion of structure.
- Integration of new roof with existing roofs.
- Installation of new passageways through existing brick and adobe wall systems.
- Installation of a new enclosed stairwell at the location of existing employee restroom (108) and closet (109). West entrance door 106-D1 will need to be moved to accommodate the new stairwell.

- Possible installation of a traction-mounted elevator to eliminate an equipment tower that may protrude above the roof line.

Cost Estimate – Alternative 2

The following Class 'C' estimate reflects rehabilitation of the existing Visitor Center and construction of a new two level addition onto the structure.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
VC-new construction	6,080	184	$1,119,000
VC-rehabilitation	4,750	154	732,000
Grnd source heat pump	10,830	6	65,000
Old Public Restroom	190	154	29,000
Site work			100,000
Subtotal (construction)			$2,045,000
Architectural design (A/E Tit. 1&2)			
(add 18%)			368,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibit design & constr.	1,950	350	683,000
Subtotal			$1,096,000
Total			**$3,141,000**

Treatment Alternative 3a

Open Courtyard and Wing Addition

Description

Alternative 3a evokes the traditional layout of Spanish colonial architecture through wing additions that compliment the present visitor center design. The addition is within the present amphitheater footprint, and uses the building to shelter a courtyard that can be used for presentations, special occasions, and casual use by daily visitors. The bluffs would be seen from the courtyard. The eastern edge of the courtyard would be protected by a porch roof extension from the exhibit wing roof. The new wings would match the width of the Museum and Jackson Wings.

The north wing would be held back from the Landmark Wing to provide required emergency egress from the courtyard, access for moving equipment into the courtyard, surface drainage from the courtyard, and to avoid joining new construction to the fragile Landmark Wing adobe walls. A tall masonry garden wall with wide doors would enclose the space between the Landmark Wing and new north wing. The courtyard would be paved with brick or tile, and a fountain could provide a focal point for the courtyard.

With this alternative the visitor contact counter and sales area would be located within the Museum Room (102), and a theater in the Landmark Wing (110). Public restrooms would be located within the Jackson Wing (115). All exhibits would be located in a new wing addition extending north from the present Jackson Wing. The exhibit space ceiling would be open to reveal new laminated or timber trusses set at an interval similar to what is found in the existing Museum and Landmark Wings. At the northeast corner of the building would be an exhibit room dedicated to the Jackson Collection. This room would feature a heightened ceiling with clerestory windows facing north and east.

The two offices (111 and 112) would be removed and the floor level brought up to meet that of the first floor. A portion of the roof over the two offices would need to be removed to provide required head room within the south porch. A new portal would need to be created between Room 102 and the south porch. Administrative offices would be located in a new wing forming the north enclosure of the building.

A full basement can be constructed beneath the new addition to provide storage and mechanical space, and area beneath the administrative office wing for an employee break room and other office functions, and an elevator.

The existing public restroom building would be rehabilitated for use as a vending area and storage.

Analysis

The Alternative 3a addition would be compatible with the design style and massing of the existing building. Creation of the courtyard through the wing additions maintains an exterior space that can be used for public gatherings. Most new addition work is segregated from the fragile adobe constructions. The exhibit room would be isolated from exterior entrances, except for emergency exits, that would provide increased control of internal environmental conditions. Placement of the exhibit room to the northeast offers the possibility of an interior view of the bluff.

Disadvantages to this alternative include:

- Placing public restrooms within the Jackson Wing may appear inappropriate balanced against the original intent of the room to display works by Jackson.
- The design falls slightly short of the 1,900 square feet goal for exhibit space.
- Placing the Jackson collection at the northeast corner of the new wing would pose a security concern in view of the long distance from the visitor contact area.
- The design requires removal of original adobe walls and a portion of the roof system at the office area (Rooms 111 and 112).
- Portals would need to be cut through fired brick and adobe walls to provide new circulation paths and means of egress.

Special Construction

- Demolition of existing sunken office area including foundation and a portion of the roof system to provide adequate headroom.
- Construction of a new enclosed stairwell within the sunken office area.
- Installation of new passageways through existing brick and adobe wall systems.
- Installation of a basement-mounted traction elevator to eliminate an equipment tower that may protrude above the roof line.
- Installation of new glue-laminated timber trusses within exhibit space.

Cost Estimate – Alternative 3a

The following Class 'C' estimate reflects rehabilitation of the existing Visitor Center and construction of a new two level addition, including a central courtyard, onto the structure.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
VC-new construction	7,580	184	$1,395,000
VC-rehabilitation	4,750	154	732,000
Grnd source heat pump	12,330	6	74,000
Traction elevator			150,000
New timber trusses	1,270	9	11,000
Courtyard	2,480	40	99,000
Old Public Restroom	190	154	29,000
Site work			50,000
Subtotal (construction)			$2,540,000
Architectural design (A/E Tit. 1&2) (add 18%)			457,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibits incl. Design	1,844	350	645,000
Subtotal			$1,147,000
Total			**$3,687,000**

Treatment Alternative 3b

Open Courtyard and Wing Addition

Description

This alternative generally mimics that of Alternative 3a but with some revisions. A circulation route between the theater and exhibit hall would be established by moving the stairwell to the area now occupied by the employee restroom (108) and closet (109) at the first floor, and sales storage (007) at the basement level. Existing stair (107) would be removed.

The relationship between the visitor contact area and the public restrooms would be revised in Alternative 3b. The visitor contact counter would be moved to the east end of the Museum Wing. The doorway between the Jackson and Museum wings could provide a rear access to the counter or be completely infilled as indicated in the design drawing. A hall would be created between the public restrooms and the west wall of the Jackson Wing.

The open courtyard porch area would be enclosed to expand adjacent exhibit space by 475 square feet. Placement of the exhibit room to the northeast offers the possibility of an interior view of the bluff. The basement level area beneath the expanded exhibit space can be either slab on grade, as presented in the current design, crawlspace, or full basement for more storage space. The dioramas now located in the Jackson Wing could be moved to the south end of the new exhibit hall.

A theater seating arrangement option is provided in this design. A center isle would provide about 78 seats as compared to 63 seats in Alternative 3a.

Analysis

With this alternative circulation within the visitor contact space and between the theater and exhibit hall is improved over that in Alternative 3a. Upon leaving the theater visitors would have the option of moving to the exhibits without traveling back through the visitor contact area. Space behind the visitor contact counter would be expanded over the previous design. The counter would be pocketed into the end of the room rather than projecting into the space, allowing more room for queued visitors.

Separating public restroom access has the advantage of segregating daily restroom cleanup and potential lines from forming within the visitor contact area. But the restroom entries in this design would require longer travel by visitors to access the restrooms.

Disadvantages to this alternative include:

- Placement of the visitor contact desk at the east end of History Room (102) removes them from the front door and complicates visitor access to the new interior restrooms.
- Installing the stairwell in the area now occupied by the employee restroom would require that west entry (106-D1) be moved south on the adobe wall system. This will have an impact on the appearance of the west exterior elevation.
- Placing public restrooms within the Jackson Wing may appear inappropriate balanced against the original intent of the room to display works by Jackson.
- The design requires removal of original adobe walls and a portion of the roof system at the office area (Rooms 111 and 112).

- Portals would need to be cut through fired brick and adobe walls to provide new circulation paths and means of egress.

Special Construction

- Demolition of existing sunken office area including foundation and a portion of the roof system to provide adequate headroom.
- Construction of a new enclosed stairwell at the west entry will require removal of a structural concrete floor system and moving the west entrance.
- Installation of new passageways through existing brick and adobe wall systems.
- Back-lit screen or large screen television required in the theater for presentations.
- Installation of a basement-mounted traction elevator to eliminate an equipment tower that may protrude above the roof line.
- Installation of new glue-laminated timber trusses within exhibit space.

Cost Estimate – Alternative 3b

The following Class 'C' estimate reflects rehabilitation of the existing Visitor Center and construction of a new two level addition, including a central courtyard, onto the structure.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
VC-new construction	8,090	184	$1,489,000
VC-rehabilitation	4,750	154	732,000
Grnd source heat pump	12,840	6	77,000
Traction elevator			150,000
New timber trusses	1,180	9	11,000
Courtyard	2,140	40	86,000
Old Public Restroom	190	154	29,000
Site work			50,000
Subtotal (construction)			$2,624,000
Architectural design (A/E Tit. 1&2) (add 18%)			472,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibits incl. Design	2,040	350	714,000
Subtotal			$1,231,000
Total			**$3,855,000**

Treatment Alternative 3c

Open Courtyard and Wing Addition

Description

This alternative is again a variation of the open courtyard concept, but with revisions to the exhibit area. In this alternative the north end of the exhibit space would once again terminate with an exhibit gallery that could feature the Jackson collection, changing exhibits, or continue with the overall exhibit theme. The central core exhibit gallery would be scaled to the proportions of the old timber ceiling exhibit rooms, but feature glue-laminated timber beams. The corridor west of the core exhibit room would also have space for exhibits. Placement of the exhibit room to the northeast offers the possibility of an interior view of the bluff.

Analysis

Exhibit would be environmentally segregated from the remainder of the structure. The close proximity of offices to the exhibit rooms would provide a measure of security.

Special Construction

- Demolition of existing sunken office area including foundation and a portion of the roof system to provide adequate headroom.
- Construction of a new enclosed stairwell at the west entry will require removal of a structural concrete floor system and moving the west entrance.
- Installation of new passageways through existing brick and adobe wall systems.
- Back-lit screen or large screen television required in the theater for presentations.
- Installation of a basement-mounted traction elevator to eliminate an equipment tower that may protrude above the roof line.
- Installation of new glue-laminated timber trusses within exhibit space.

Cost Estimate – Alternative 3c

The following Class 'C' estimate reflects rehabilitation of the existing Visitor Center and construction of a new two level addition, including a central courtyard, onto the structure.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
VC-new construction	7,770	184	$1,430,000
VC-rehabilitation	4,750	154	732,000
Grnd source heat pump	12,520	6	75,000
Traction elevator			150,000
New timber trusses	1,150	9	10,000
Courtyard	2,160	40	86,000
Old Public Restroom	190	154	29,000
Site work			50,000
Subtotal (construction)			$2,562,000
Architectural design (A/E Tit. 1&2) (add 18%)			461,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibits incl. Design	2,090	350	732,000
Subtotal			$1,238,000
Total			**$3,800,000**

Treatment Alternative 3d

Open Courtyard and Wing Addition with Second Entrance

Description

This alternative is again a variation of the open courtyard concept, but internal functions and lines of circulation vary. In this alternative the Jackson Room would continue to serve as traditional exhibit display, and public restrooms would be placed within the new east wing. A second entrance and lobby through the east elevation ties the bluff walking trail more closely to the building. This lobby would be more closely associated with the restrooms. Both lobbies would be monitored from a contact counter that passes through an opening created in the north wall of the museum wing. The theater would be accessed off an enclosure overlooking the courtyard, formed by the extension of the theater east roof line. The theater projection room would be directly accessed from behind the visitor contact counter. A large exhibit area would be located in the new east wing. A large window overlooking the bluffs could be placed in the north elevation of that room.

Analysis

The dual lobbies would provide more flexibility in accessing the structure from either the south or east parking lots, and the building would be more closely associated with the bluff walking trail. Opening the north masonry wall of the present Museum Room would provide more of a connection between the visitor contact and sales area and the theater and courtyard areas. Both visitor entrances could be monitored from the same visitor contact counter. Close proximity of the counter to the Jackson Room collection would provide additional security. Construction of public and employee restrooms in the same area would reduce plumbing costs.

Special Construction

- Demolition of existing sunken office area including foundation and a portion of the roof system to provide adequate headroom.
- Construction of a new enclosed stairwell at the west entry will require removal of a structural concrete floor system and moving the west entrance.
- Installation of new passageways through existing brick and adobe wall systems.
- Installation of a basement-mounted traction elevator to eliminate an equipment tower that may protrude above the roof line.

Cost Estimate – Alternative 3d

The following Class 'C' estimate reflects rehabilitation of the existing Visitor Center and construction of a new two level addition with two visitor entrances, and a central courtyard.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
VC-new construction	9,200	184	$1,693,000
VC-rehabilitation	4,750	154	732,000
Grnd source heat pump	13,950	6	84,000
Traction elevator			150,000
Courtyard	1,850	40	74,000
Old Public Restroom	190	154	29,000
Site work			50,000
Subtotal (construction)			$2,812,000
Architectural design (A/E Tit. 1&2)			
(add 18%)			506,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibits incl. design	2,000	350	700,000
Subtotal			$1,251,000
Total			**$4,063,000**

Treatment Alternative 4a

Closed Courtyard and Wing Addition

Description

This alternative builds upon the wing and courtyard concept presented in Alternatives 3a and 3b. The principal difference is the promotion of a circular visitor circulation route centered around a courtyard core. This alternative would require construction of an addition attached to the north end of the Landmark Wing to make a complete internal circulation route. Width of the new addition wings would be sized to that of the existing wings.

Visitors would enter the primary entrance and head straight into the Landmark Wing to the visitor contact and sales areas. Public restrooms would be located just north beyond a new lobby attached to the Landmark Wing. Continuing clockwise around the courtyard, visitors would encounter the theater and three exhibit rooms. Two of the exhibit rooms would be located in the Museum and Landmark Wings.

Because nearly all first floor space is occupied by visitor functions, most office, administrative, and storage space would be located in the basement.

The existing public restroom building would be rehabilitated for use as a vending area and storage.

Analysis

This alternative would offer the visitor an opportunity to continue through all phases of the visitor center experience without doubling back to the front entrance. A straight-ahead approach upon entering the structure would be less confusing than requiring to turn into the initial contact area as in previous alternatives. The series of exhibit galleries is more in line with the present visitor center exhibit presentation.

Placing public restrooms within the new addition would ease possible tension over locating that function within the Jackson Wing. The theater and public restrooms placed in new construction would allow for more flexibility in how these spaces are designed and used in comparison with the previous alternatives placing these functions within the historic wings. However, placement of the restrooms and theater to the north removes any possibility of an interior view of the bluffs and makes for an awkward traffic flow.

A new enclosed stairwell would be required by code near the west entrance. This would necessitate moving the west entrance south. Stairwell 107 would then be removed.

Disadvantages with this alternative include:

- Inefficient use of interior space due to long and wide hallways.
- The remote location of the theater away from the visitor contact area would hinder operation of the theater with minimum staffing. The location of the theater also diminishes the importance of the feature audio-visual program in the visitor experience.
- Courtyard drainage could be a technical challenge given that surface drainage is eliminated.
- The need to penetrate the old adobe and brick wings, especially through the Landmark Wing.
- Installing the stairwell in the area now occupied by the employee restroom would require that west entry (106-D1) be moved south on the adobe wall system. This will have an impact on the

appearance of the west exterior elevation.
- Exposing the elevator within a public corridor.

Special Construction
- Demolition of existing sunken office area including foundation and a portion of the roof system to provide adequate headroom.
- Construction of a new enclosed stairwell at the west entry will require removal of a structural concrete floor system and moving the west entrance.
- Installation of new passageways through existing brick and adobe wall systems.
- Installation of new glue-laminated timber trusses within new exhibit space.

Cost Estimate – Alternative 4a

The following Class 'C' estimate reflects rehabilitation of the existing Visitor Center and construction of a new two level addition, including a central courtyard, onto the structure.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
VC-new construction	9,420	184	$1,734,000
VC-rehabilitation	4,750	154	732,000
Grnd source heat pump	14,170	6	85,000
Traction elevator			150,000
Courtyard	1,620	40	65,000
Old Public Restroom	190	154	29,000
Site work			50,000
Subtotal (construction)			$2,845,000
Architectural design (A/E Tit. 1&2)			
(add 18%)			512,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibits incl. Design	2,050	350	718,000
Subtotal			$1,275,000
Total			**$4,120,000**

Treatment Alternative 4b

Closed Courtyard and Wing Addition

Description

This alternative would continue the visitor circulation path seen in Alternative 4a, but with some variations. Upon entering the building visitors would turn right into the visitor contact and sales area. Public restrooms would be located within the Jackson Wing, segregated from the visitor contact area by a hallway. Visitors would proceed north, or counterclockwise through the building, to the theater for a presentation, or have the option of proceeding directly to an exhibit hall in the north portion of the building. Passing through a lobby connecting the new addition to the Landmark Wing, visitors would enter the Landmark Wing exhibit room, before exiting through the front lobby.

With this alternative the elevator, sales office, and storage would be clustered at the first floor near the public restrooms. In the basement offices would be located at the north wing, and the employee break room and restrooms in the east wing.

Analysis

The footprint of this alternative is slightly larger than Alternative 4a, and about four feet beyond the north boundary of the amphitheater. The slightly larger space provides for a few more amenities such as increased storage space at the first floor level, a larger theater, and a kitchen segregated from the employee break room at the basement level. However, exhibit space falls short of the program by a little over 100 square feet. While the circulation path is circular with respect to the courtyard, the exhibit rooms are separated by a lobby required to provide egress from the courtyard. Placement of the exhibit room and theater to the north offers the possibility of an interior view of the bluff.

As with Alternative 4a, a new enclosed stairwell would be required by code near the west entrance. This would necessitate moving the west entrance south. Stairwell 107 would then be removed.

Disadvantages with this alternative include:

- The remote location of the theater away from the visitor contact area would hinder operation of the theater with minimum staffing. The location of the theater also diminishes the importance of the feature audio-visual program in the visitor experience.
- Courtyard drainage could be a technical challenge given that surface drainage is eliminated.
- The need to penetrate the old adobe and brick wings, especially through the Landmark Wing.
- Installing the stairwell in the area now occupied by the employee restroom would require that west entry (106-D1) be moved south on the adobe wall system. This will have an impact on the appearance of the west exterior elevation.
- Exposing the elevator within a public corridor.

Special Construction

- Demolition of existing sunken office area including foundation and a portion of the roof system to provide adequate headroom.
- Construction of a new enclosed stairwell at the west entry will require removal of a structural concrete floor system and moving the west entrance.
- Installation of new passageways through existing brick and adobe wall systems.

- Installation of a basement-mounted traction elevator to eliminate an equipment tower that may protrude above the roof line.
- Installation of new glue-laminated timber trusses within new exhibit space.

Cost Estimate – Alternative 4b

The following Class 'C' estimate reflects rehabilitation of the existing Visitor Center and construction of a new two level addition, including a central courtyard, onto the structure.

Item	*Area (sf)*	*$/sf*	*Est. Cost*
VC-new construction	9,330	184	$1,716,000
VC-rehabilitation	4,750	154	732,000
Grnd source heat pump	14,080	6	84,000
Traction elevator			150,000
New timber trusses	1,120	9	10,000
Courtyard	2,040	40	82,000
Old Public Restroom	190	154	29,000
Site work			50,000
Subtotal (construction)			$2,853,000
Architectural design (A/E Tit. 1&2)			
(add 18%)			414,000
Value analysis			40,000
Archeology mitigation			5,000
Exhibits incl. Design	1,790	350	627,000
Subtotal			$1,186,000
Total			**$4,039,000**

Appendix I: Hazardous Materials Report

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LANDMARK ENVIRONMENTAL, INC.

July 8, 2016

Ms. Tina Bishop
Mundus Bishop
2601 Blake Street, Suite 300
Denver, Colorado 80205
tina@mundusbishop.com

Reference: Results of Screening-Level Hazardous Materials Survey, Scotts Bluff National Monument Headquarters and Visitors Center in Gering, Nebraska. 16033.001.001

Dear Ms. Bishop:

In accordance with our proposal of April 1, 2016, Landmark Environmental, Inc. (Landmark) has completed a screening-level asbestos containing materials (ACM), lead-based paint (LBP) and other regulated materials (ORM) survey for Mundus Bishop at the Scotts Bluff National Monument Headquarters and Visitors Center in Gering, Nebraska. It is our understanding that this project is in the programming and planning stage. Accordingly, our screening-level survey was designed to provide appropriate information to support project planning and budgeting for eventual renovation.

Scope of Work

The on-site structures were completed and/or renovated at various times, and consist of the following:

1. Visitor Center/Museum (1-story with basement; total about 6,000 ft^2; the basement has known radon issues attributable to the fossils stored there)
2. One 1,500-ft^2 Administration Building (former residence) constructed in the 1930s
3. One 1,500-ft^2 Residence constructed in the 1950s
4. One 8-bay Maintenance Garage constructed and/or expanded at various times since the 1930s.

Landmark's Nebraska-certified asbestos building inspector surveyed for the following materials, features and/or conditions:

1. Asbestos containing materials (ACM)
2. Lead-based paint (LBP) in buildings and soil
3. Other Regulated Materials (ORMs)
4. Mold
5. Radon
6. Biohazards

Asbestos Containing Materials (ACM) Survey

Sampling was conducted in accordance with U.S. Environmental Protection Agency (EPA) Asbestos Hazard and Emergency Response Act (AHERA) and U.S. Occupational Safety and Health Administration (OSHA) Chapter 29 Code of Federal Regulations (CFR) 1926.1101 requirements, as well as generally accepted industry standards. Asbestos inspection activities were conducted by AHERA and State of Nebraska Department of Health and Human Services accredited personnel. Bulk samples of accessible suspect ACMs were collected in a representative manner as determined by the inspector. Bulk material samples were collected by taking a composite core that included all layers within the suspect ACM. Sampling was limited to materials that were visible and readily accessible to the inspector.

The bulk suspect ACM samples were submitted to Reservoirs Environmental, Inc. (REI), located in Denver, Colorado. REI is a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory, which is also accredited by the American Industrial Hygiene Association (AIHA). The samples were analyzed using Polarized Light Microscopy (PLM) to determine asbestos type and percent using progressive analysis.

Applicable asbestos regulations define ACM as material containing greater than one percent asbestos by weight, volume or surface area, and also distinguish between friable and non-friable forms of ACM. Friable ACMs can be crumbled or reduced to powder by hand pressure when dry, while non-friable materials cannot. Regulations stipulate that if any one sample of a homogenous material contains greater than one percent asbestos, the entire homogenous area is considered asbestos-containing.

Lead Containing Paint (LCP) Survey

The LCP survey was performed concurrently with the ACM survey. Paint samples were collected from discrete, representative locations selected by the inspector. The inspector identified individual testing combinations based on substrate type, component and color.

Areas of exposed soil adjacent to typical painted external building surfaces (e.g., window frames, trim and siding, soffits and fascia boards, etc.) were visually inspected for paint chips. In addition, representative composited soil samples were collected from the perimeter of each structure and analyzed for total lead content. The sampling strategy consisted of collecting a composite sample from the drip line of each structure, with an additional composite sample 3 feet out from the drip line. Analytical results for soils were compared to the EPA screening level for lead in residential soils, which is 400 milligrams per kilogram (mg/kg).

The paint chip and soil samples were submitted to REI, which is an Environmental Lead Laboratory Accreditation Program (ELLAP) accredited laboratory that uses procedures developed in compliance with the guidelines established by the National Institute of Occupational Safety and Health (NIOSH) Method 7420.

The EPA and Department of Housing and Urban Development (HUD) regulate LBP abatement activities in target housing and child occupied facilities. Childcare facilities fall under this definition. OSHA regulates worker exposure to lead for coatings with any detectable lead. The EPA and HUD regulations related to LBP abatement do not apply to the project site unless abatement activities occur (specifically designed to permanently remove LBP/LBP hazards). LBP is defined as paint containing 0.5 percent lead by weight or 1.0 milligram per cubic centimeter by both the EPA and HUD. Lead containing paint (LCP) is paint containing any detectable concentrations of lead.

The EPA also developed a program for renovation activities in child-occupied/target housing and child-care facilities called the Lead Renovation, Repair, and Paint Rule (RRP Rule). This rule requires that firms performing renovation, repair, and painting projects that disturb lead-based paint in homes, child care facilities and pre-schools built before 1978 have their firm certified by EPA (or an EPA authorized state), use certified renovators who are trained by EPA-approved training providers and follow lead-safe work practices. The surveyed buildings are not considered child-occupied facilities.

The OSHA lead in construction standard 29 CFR 1926.62 addresses requirements for sites where the employer has reason to believe that any employee may be exposed to lead in excess of OSHA's action level (AL) of 30 micrograms per cubic meter (30 µg/m3) over an 8-hour time weighted average. The OSHA standard applies to all construction activities that may impact LCP (any detectable lead).

Other Regulated Materials

In conjunction with the survey for ACM and LBP, Landmark developed an inventory of Other Regulated Materials (ORMs). These included building materials that when discarded would be classified as universal wastes, such as fluorescent lighting fixtures, polychlorinated biphenyls (PCB) ballasts, mercury switches, smoke detectors, refrigerants, and stored chemicals.

Radon

Upon arriving at the project site and coordinating with the designated on-site representative, Landmark placed four radon sample canisters in the Visitor Center/Museum basement to sample radon gas over a 48-hour period. Canisters were provided and analyzed by EMSL Analytical, Inc., a National Radon Proficiency Program (NRPP) certified laboratory.

Moisture and Microbial Evaluation

Landmark performed a visual assessment for microbial growth and conducted a moisture survey of suspect porous building materials utilizing a moisture meter. The inspector interviewed the appropriate on-site representative regarding existing knowledge of such conditions.

Historical Documentation Review – Underground Storage Tanks

Landmark attempted to obtain information related to the historical removal of underground storage tanks (USTs) on site.

Biological

Landmark's inspector performed a visual survey for indications of potential biological hazards such as those associated with rodent infestation, pigeons, and/or bats. The inspector also interviewed appropriate on-site representatives regarding existing knowledge of such conditions.

Findings

Asbestos Containing Materials

Landmark collected 55 bulk samples from a total of 23 different types of suspect ACMs. Samples from 5 materials had concentrations of greater than one percent (positive for asbestos). All asbestos sampling results are presented in Attachment A. The following materials were confirmed to be asbestos containing:

1. Air cell pipe insulation debris (friable) – Located in the Administration Building attic, north side of access panel, quantity unknown.

2. HVAC duct seam paper (friable) – Located in the Administration Building furnace flue in furnace closet, 400 square feet.

3. Sheet vinyl flooring (friable) – Located in Administration Building copy room, under carpet pads, 30 square feet.

4. HVAC duct paper wrap (friable) – Located in Residence on 12-inch metal duct on north side of basement, 150 linear feet.

5. Mudded pipe fittings (friable) – Located in Residence on 1-inch pipe on north side of basement, 20 linear feet.

6. Acoustical surface (popcorn) texture (friable) – Located on the ceiling in the William H. Jackson Room in the Visitors Center hidden above newer wood panels, 600 square feet. (This material was sampled by Panhandle Geotechnical & Environmental, Inc. in February 2015. Laboratory report provided to Landmark by Monument staff.)

The presence of friable ACM pipe insulation debris inside the Administration Building attic access panel presents a potential risk of exposure to persons entering the attic. Access to the attic should be restricted and the access way posted with appropriate asbestos warning signage until the extent of the debris can be determined and the debris removed. If it is determined that the extent of the debris exceeds 160 square feet, a cleanup is required under Nebraska regulations.

Landmark also noted areas where there were indications of improvements to older piping, such as new pipe insulation seen in the Residence crawl space. Where such renovations have occurred in unfinished areas, such as crawl spaces, the potential exists for the presence of older thermal system insulation (TSI) debris having been discarded on underlying dirt surfaces. These conditions can be masked by soil covers/vapor barriers (e.g., polyethylene sheeting) installed following plumbing renovations. A more intrusive investigation would be required to determine if these conditions exist at this site.

Suspect non-friable ACM was not sampled. Observed materials that may be assumed to be ACM included mastic beneath wood tile in the residence, residual mastic in a small closet beneath the stairs in the Residence, and roofing felts beneath wood shakes on each of the buildings. ACM resilient flooring and/or residual mastic may be present beneath carpeted, sheet vinyl or tiled flooring throughout.

Projected ACM Abatement Costs

Estimated costs for abatement of identified ACM are presented in the cost spreadsheet included in Attachment A. These estimates are strictly preliminary in nature, are based on Landmark's industry experience, and were not obtained through the solicitation of written bids.

Lead Containing Paint

Sampling results for lead in paint and soil are presented in Attachment B. Only one of the 21 paint samples collected was determined to contain greater than 0.5 percent lead, thus being classified as LBP. Tan paint on the metal downspout at the north exterior of Administration Building contains 0.61 percent lead.

Lead concentrations in composite soil samples collected from the perimeter of each building ranged from non-detect to 54.6 mg/kg. None of the samples approached the EPA Residential Screening Level of 400 mg/kg.

Other Regulated Materials

An inventory of observed ORMs is presented in Attachment C.

Radon

Radon sampling results for the Visitor Center/Museum basement are presented in Attachment D. Two samples were collected using two side-by-side sample canisters per sample to ensure sample precision. Analytical results for the two samples ranged from 4.6 picocuries per liter (pCi/L) to 7.2 pCi/L. These results are higher than the EPA residential recommended limit of 4 pCi/L. As radon mitigation devices are already located in the basement, an adjustment by a Radon Professional may be warranted. The National Park Services (NPS) should contact the company that installed the equipment for more information.

Moisture and Microbial Evaluation

Landmark's inspector did not observe visual indications of water intrusion and/or damage within any of the structures. Moisture readings were taken from various building materials throughout the Administration Building and Residence. Moisture readings varied from 8.2 percent in gypsum wall board in the Residence living room to a high of 14.3 percent in the Residence bathroom shower where there was some typical mildew visible in the grout.

Historical Documentation Review – Underground Storage Tanks (UST)

Landmark interviewed personnel on-site who could not relate information specific to the former location and/or removal of historical USTs. Representatives at the site were, however, able to provide information specific to the removal of four oil-fired furnaces and the conversion of the existing HVAC system to natural gas in late 1990. Landmark then checked the on-line records for USTs on both the Nebraska State Fire Marshall and the Nebraska Department of Environmental Quality (NDEQ) websites. The Fire Marshall's website indicates that four USTs were removed from the National Monument; however, no information regarding specific locations, contents or date(s) of removal was available on line. A facility ID number, 7019, was provided. The subject property and ID appear on the NDEQ list of leaking USTs (LUSTs). The data provided does not

specify the number of USTs, but does indicate contents as diesel and gasoline and a discovery data of October 11, 1989. The incident status is indicated as "no further action – closed".

In summary, available data indicate that USTs were present on the site and were registered with the state. In addition, a LUST incident did occur in 1989, after the promulgation of UST regulations, and was managed to the satisfaction of the regulatory agency, such that a "no further action" determination was made.

Biological

On-site personnel were not aware of any significant signs of pest intrusion of animal droppings. Landmark's inspector did observe some apparent mouse droppings behind a cellar access door in the Visitors Center basement. No other indications of accumulated rodent or bird feces were observed.

Limitations

It should be noted that no destructive investigation of wall interiors and below grade structures was performed. Roofing materials were not included in the survey. In the event of demolition or renovation, asbestos could be discovered that was not identified during this investigation. Limited destructive investigation of building materials to be impacted by renovation or demolition is recommended prior to conducting such work.

This document is not intended to be used as a bid document for the removal, repair, encapsulation, enclosure, or Operations and Maintenance (O&M) of asbestos-containing materials. Quantities of identified asbestos-containing materials should be field verified by the contractor prior to bidding on any and all work associated with this inspection report. Landmark can prepare a scope of work/project design, bid documents, removal and repair methods/procedures, specifications and O&M plans if desired by the Customer. These documents, if requested, will be prepared by EPA accredited and state certified individuals.

Any estimated costs for future abatement provided in this report are solely for financial planning purposes. Such estimates are preliminary in nature, based on Landmark's industry experience, and were not obtained through the solicitation of written bids. Preliminary estimates do not constitute a proposal to perform the work.

Landmark performed asbestos response services in a manner consistent with the level of care and expertise exercised by members of the asbestos inspection and assessment profession. Landmark does not imply or guarantee that every suspect ACM/LCP on or in the building has been identified or sampled.

Landmark appreciates the opportunity to provide our services on this important project. Please feel free to contact us if you have any questions or if we can provide any additional assistance.

Respectfully,

Landmark Environmental, Inc.



Charles D. Senz
Senior Project Manager

CC: Matt Roberts

Attachment A – Asbestos Data and Cost Spreadsheet
Attachment B – Lead Data for Paint and Soils
Attachment C – Inventory of Other Regulated Building Materials
Attachment D – Radon Sampling Data

Attachment A

ASBESTOS DATA

LANDMARK ENVIRONMENTAL, INC.

TABLE 1. ASBESTOS BULK SAMPLE RESULTS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Admin Building	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/26/16

Sample ID	Homogenous Material Description	Sample Location	Homogenous Area ID	Material AHERA Category	Material Condition	Approximate Quantity	Laboratory Analytical Results (REI #)
AD-SE01-01	Exterior stucco north east	Attic space unpainted adobe mud	1	S	G	400 sf	ND
AD-SE01-02	Exterior stucco north east	Back entrance east wall inside	1	S	G	400 sf	2% Chrysotile 0.75 PC
AD-SE01-03	Exterior stucco north east	Back entrance outside	1	S	G	400 sf	2% Chrysotile 0.25 PC
AD-SE01-04	Exterior stucco north east	North wall east of adobe fence	1	S	G	400 sf	ND
AD-SE01-05	Exterior stucco north east	East side of north end	1	S	G	400 sf	TR Chrysotile <0.25 PC
AD-SE02-01	Exterior stucco south east	North east corner	2	S	G	800 sf	TR Chrysotile <0.25 PC
AD-SE02-02	Exterior stucco south east	South east corner	2	S	G	800 sf	ND
AD-SE02-03	Exterior stucco south east	Front entrance	2	S	G	800 sf	ND
AD-SE02-04	Exterior stucco south east	West end at south corner	2	S	G	800 sf	ND
AD-SE02-05	Exterior stucco south east	South side	2	S	G	800 sf	TR Chrysotile <0.25 PC
AD-SE03-01	Exterior stucco west	West side north end	3	S	G	500 sf	ND
AD-SE03-02	Exterior stucco west	West side	3	S	G	500 sf	ND
AD-SE03-03	Exterior stucco west	South side west end	3	S	G	500 sf	ND
AD-SE03-04	Exterior stucco west	North side	3	S	G	500 sf	ND
AD-SE03-05	Exterior stucco west	South side east end	3	S	G	500 sf	ND
AD-TSI01-01	Air cell pipe insulation debris	Attic north side of access panel	4	TSI	P	Unknown	65% Chrysotile
AD-TSI02-01	HVAC duct seam paper	Furnace flue in furnace closet	5	TSI	G	400 sf	80% Chrysotile

Sample ID	Homogenous Material Description	Sample Location	Homogenous Area ID	Material AHERA Category	Material Condition	Approximate Quantity	Laboratory Analytical Results (REI #)
AD-PL01-01	Interior plaster on perimeter walls	Furnace room west wall	6	S	G	1800 sf	ND
AD-PL01-02	Interior plaster on perimeter walls	South wall of entrance	6	S	G	1800 sf	ND
AD-PL01-03	Interior plaster on perimeter walls	West wall of superintendent's office	6	S	G	1800 sf	ND
AD-PL01-04	Interior plaster on perimeter walls	South wall of south center office	6	S	G	1800 sf	ND
AD-PL01-05	Interior plaster on perimeter walls	North wall of copy room	6	S	G	1800 sf	ND
AD-SVF01-01	Sheet vinyl flooring under carpet pads	Copy room	7	M	G	30 sf	25% Chrysotile

Definitions:

ND (Non-Detect) = Non-asbestos containing
TR (Trace) = less than 1% asbestos
PC = Point Count Analysis
TSI = Thermal System Insulation
S = Surfacing
M = Miscellaneous
G = Good
F = Fair
P = Poor

TABLE 1. ASBESTOS BULK SAMPLE RESULTS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Maintenance Building	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/26/16

Sample ID	Homogenous Material Description	Sample Location	Homogenous Area ID	Material AHERA Category	Material Condition	Approximate Quantity	Laboratory Analytical Results (REI #)
1959-PL01-01	Plaster wall	Bay #2 east wall center	1	S	G	300 sf	TR Chrysotile <0.25 PC
1959-PL01-02	Plaster wall	Bay #2 east wall north end	1	S	G	300 sf	TR Chrysotile <0.25 PC
1959-PL01-03	Plaster wall	Bay #2 east wall south end	1	S	G	300 sf	TR Chrysotile <0.25 PC
1959-PL02-01	Plaster wall	Bay #3 north wall west end	2	S	G	66 sf	TR Chrysotile <0.25 PC
1959-PL02-02	Plaster wall	Bay #3 north wall center	2	S	G	66 sf	TR Chrysotile <0.25 PC
1959-PL02-03	Plaster wall	Bay #3 north wall east end	2	S	G	66 sf	2% Chrysotile 0.75 PC
1959-PL03-01	Plaster wall	Bay #4 east wall north end	3	S	G	300 sf	TR Chrysotile <0.25 PC
1959-PL03-02	Plaster wall	Bay #4 east wall center	3	S	G	300 sf	2% Chrysotile 0.50 PC
1959-PL03-03	Plaster wall	Bay #4 east wall south end	3	S	G	300 sf	TR Chrysotile <0.25 PC
1936-AM-01	Adobe mud walls-interior	North back way	4	S	P	1800 sf	ND
1936-AM-02	Adobe mud walls-interior	East perimeter wall	4	S	P	1800 sf	ND
1936-AM-03	Adobe mud walls-interior	West perimeter wall	4	S	P	1800 sf	ND
1981-JC01-01	Joint compound on gypsum board	East wall of main lobby	5	M	G	200 sf	ND

Definitions:

ND (Non-Detect) = Non-asbestos containing
TR (TR) = less than 1% asbestos
PC = Point Count Analysis

TSI = Thermal System Insulation
S = Surfacing
M = Miscellaneous

G = Good
F = Fair
P = Poor

TABLE 1. ASBESTOS BULK SAMPLE RESULTS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Residence	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/26/16

Sample ID	Homogenous Material Description	Sample Location	Homogenous Area ID	Material AHERA Category	Material Condition	Approximate Quantity	Laboratory Analytical Results (REI #)
1958-SE-01	Exterior stucco, tan	North west corner of garage, 5'Up	1	S	G	1600 sf	TR Chrysotile <0.25 PC
1958-SE-02	Exterior stucco, tan	South side (front) east end	1	S	G	1600 sf	TR Chrysotile <0.25 PC
1958-SE-03	Exterior stucco, tan	East side of building at north end	1	S	G	1600 sf	TR Chrysotile <0.25 PC
1958-SE-04	Exterior stucco, tan	South side of building at west end	1	S	G	1600 sf	TR Chrysotile <0.25 PC
1958-SE-05	Exterior stucco, tan	West side of building at garage door	1	S	G	1600 sf	TR Chrysotile <0.25 PC
1958-TSI01-01	HVAC duct paper wrap on 12" metal duct	HVAC duct on north side of basement	2	TSI	G	150 lf	70% Chrysotile
1958-TSI02-01	Mudded pipe fitting insulation	1" pipe fitting on north side of basement	3	TSI	F	20 lf	45% Chrysotile
1958-SVF01-01	Sheet vinyl flooring, brown with square pattern	Kitchen	4	M	G	250 sf	ND
1958-SVF02-01	Sheet vinyl flooring	Master bedroom bath	5	M	G	35 sf	ND
1958-JC01-01	Joint compound on drywall	Kitchen, south east corner	6	M	G	300 sf	3% Chrtsotile 2.25 PC

Definitions:

ND (Non-Detect) = Non-asbestos containing	TSI = Thermal System Insulation	G = Good
TR (TR) = less than 1% asbestos	S = Surfacing	F = Fair
PC = Point Count Analysis	M = Miscellaneous	P = Poor

TABLE 1. ASBESTOS BULK SAMPLE RESULTS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Visitor Center	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/27/16

Sample ID	Homogenous Material Description	Sample Location	Homogenous Area ID	Material AHERA Category	Material Condition	Approximate Quantity	Laboratory Analytical Results (REI #)
VC-CT01-01	Drop in ceiling tile 2'x4' no pattern	Basement furnace room	1	M	G	200 sf	ND
VC-CT02-01	Drop in ceiling tile 2'x4'	Basement - History	2	M	G	600 sf	ND
VC-CT03-01	Drop in ceiling tile	Attic – Landmark room above existing plaster ceiling	3	M	G	Unknown	ND
VC-SE01-01	Stucco - exterior	SW corner of office area	4	S	G	Unknown	ND
VC-SE01-02	Stucco - exterior	South side center of building	4	S	G	Unknown	ND
VC-SE01-03	Stucco - exterior	North side by work room	4	S	G	Unknown	ND
VC-SE01-04	Stucco - exterior	North side of Landmark room	4	S	G	Unknown	ND
VC-SE01-05	Stucco - exterior	East side of William H. Jackson room	4	S	G	Unknown	ND
VC-JC01-01	Joint compound on gypsum board	Basement furnace room at south west corner	5	M	G	250 sf	ND
AB1*	Acoustical texture/popcorn	Ceiling W.H. Jackson Room, beneath newer wood panels	6	S	Not observed	600 sf	Chrysotile 5%, Trem-Act TR

Definitions:

ND (Non-Detect) = Non-asbestos containing
TR (Trace) = less than 1% asbestos
PC = Point Count Analysis
TSI = Thermal System Insulation
S = Surfacing
M = Miscellaneous
G = Good
F = Fair
P = Poor

Sample AB1 collected by Panhandle Geotechnical & Environmental, Feb 2015.

REI LAB **Reservoirs Environmental, Inc.**

June 13, 2016

Subcontract Number: **NA**
Laboratory Report: **RES 351582-2**
Project # / P.O. # **16033.001.001**
Project Description: **SBNM**

Mike DeMille
Landmark Environmental, Inc.
7881 Shaffer Parkway
Littleton CO 80217

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 351582-2 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Elisa Mari for

Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 351582-2**
Client: **Landmark Environmental, Inc.**
Client Project Number / P.O.: **16033.001.001**
Client Project Description: **SBNM**
Date Samples Received: **May 31, 2016**
Method: **EPA 600/R-93/116 - Point Count, Bulk**
Turnaround: **3-5 Day**
Date Samples Analyzed: **June 13, 2016**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
1958-SE-01	EM 1639703	A	Tan granular material w/ tan paint	100	**Chrysotile**	**TR**	TR	100
					Point Count	**<0.25**		
1958-SE-02	EM 1639704	A	Gray granular material	8		**ND**	0	100
		B	Tan granular material & tan paint	92	**Chrysotile**	**TR**	TR	100
					Point Count	**<0.25**		
1958-SE-03	EM 1639705	A	Tan granular material	100	**Chrysotile**	**TR**	TR	100
					Point Count	**<0.25**		
1958-SE-04	EM 1639706	A	Tan granular material w/ tan paint	100	**Chrysotile**	**TR**	TR	100
					Point Count	**<0.25**		
1958-SE-05	EM 1639707	A	Tan granular material w/ tan paint	100	**Chrysotile**	**TR**	TR	100
					Point Count	**<0.25**		

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 351582-2**
Client: **Landmark Environmental, Inc.**
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Client Project Description: **SBNM**
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Turnaround: **3-5 Day**
Date Samples Analyzed: **June 13, 2016**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
1958-TSI01-01	EM 1639708	A	White compound	3		**ND**	0	100
		B	White compound w/ white paint	4		**ND**	0	100
		C	White fibrous material	10		**ND**	95	5
		D	White fibrous material w/ white paint	83	**Chrysotile**	**70**	0	30
1958-TSI02-01	EM 1639709	A	Grayish tan fibrous material w/ white paint	100	**Chrysotile**	**45**	25	30
1958-SVF01-01	EM 1639710	A	Cream sheet vinyl w/ white fibrous backing material	35		**ND**	20	80
		B	Colorless resinous material w/ white/off white paint	65		**ND**	0	100
1958-SVF02-01	EM 1639711	A	Beige sheet vinyl w/ white fibrous backing material	100		**ND**	25	75
1958-JC01-01	EM 1639712	A	White/multi-colored paint	10		**ND**	0	100
		B	Off white texture	10	**Chrysotile**	**3**	2	95
					Point Count	**2.25**		
		C	White/tan drywall	80		**ND**	15	85
AD-SEO1-01	EM 1639713	A	Beige granular material	100		**ND**	1	99

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

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ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
AD-SEO1-02	EM 1639714	A	Tan granular material w/ white/multi-colored paint	100	**Chrysotile**	**2**	0	98
					Point Count	**0.75**		
AD-SEO1-03	EM 1639715	A	Gray granular debris	10		**ND**	0	100
		B	Tan granular material w/ tan paint	90	**Chrysotile**	**2**	0	98
					Point Count	**0.25**		
AD-SEO1-04	EM 1639716	A	Tan/gray stucco w/ tan paint	100		**ND**	0	100
AD-SEO1-05	EM 1639717	A	Tan granular material w/ tan paint	100	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
AD-SEO2-01	EM 1639718	A	Tan/gray stucco w/ tan paint	100	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
AD-SEO2-02	EM 1639719	A	Tan/gray stucco w/ tan paint	100		**ND**	0	100
AD-SEO2-03	EM 1639720	A	Tan/gray stucco w/ tan paint	100		**ND**	0	100
AD-SEO2-04	EM 1639721	A	Tan/gray stucco w/ tan paint	100		**ND**	0	100

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 351582-2**
Client: **Landmark Environmental, Inc.**
Client Project Number / P.O.: **16033.001.001**
Client Project Description: **SBNM**
Date Samples Received: **May 31, 2016**
Method: **EPA 600/R-93/116 - Point Count, Bulk**
Turnaround: **3-5 Day**
Date Samples Analyzed: **June 13, 2016**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
AD-SEO2-05	EM 1639722	A	Tan granular material w/ tan paint	100	**Chrysotile** **Point Count**	**TR** **<0.25**	TR	100
AD-SEO3-01	EM 1639723	A	Tan granular material w/ tan paint	100		**ND**	TR	100
AD-SEO3-02	EM 1639724	A	Tan granular material w/ tan paint	100		**ND**	0	100
AD-SEO3-03	EM 1639725	A	Tan granular material w/ tan paint	100		**ND**	TR	100
AD-SEO3-04	EM 1639726	A	Tan granular material w/ tan paint	100		**ND**	0	100
AD-SEO3-05	EM 1639727	A	Tan granular material w/ tan paint	100		**ND**	0	100
AD-PL01-01	EM 1639728	A	White granular plaster w/ white paint	100		**ND**	0	100
AD-PL01-02	EM 1639729	A	Off white resinous material	15		**ND**	0	100
		B	White granular plaster w/ white	85		**ND**	0	100
AD-PL01-03	EM 1639730	A	White granular plaster w/ white paint	100		**ND**	0	100
AD-PL01-04	EM 1639731	A	White paint w/ white compound	30		**ND**	0	100
		B	Tan granular material w/ white paint	70		**ND**	0	100

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 351582-2**
Client: **Landmark Environmental, Inc.**
Client Project Number / P.O.: **16033.001.001**
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Date Samples Received: **May 31, 2016**
Method: **EPA 600/R-93/116 - Point Count, Bulk**
Turnaround: **3-5 Day**
Date Samples Analyzed: **June 13, 2016**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
AD-PL01-05	EM 1639732	A	Off white resinous material	12		**ND**	0	100
		B	White granular plaster w/ white paint	88		**ND**	0	100
AD-TSI01-01	EM 1639733	A	Gray fibrous material	100	**Chrysotile**	**65**	15	20
AD-TSI02-01	EM 1639734	A	White/tan fibrous material	100	**Chrysotile**	**80**	0	20
AD-SVF01-01	EM 1639735	A	Yellow mastic w/ beige paint	15		**ND**	0	100
		B	Off white sheet vinyl w/ white fibrous backing material	85	**Chrysotile**	**25**	0	75
1936-AM-01	EM 1639736	A	Tan granular material	100		**ND**	TR	100
1936-AM-02	EM 1639737	A	Tan granular material	100		**ND**	TR	100
1936-AM-03	EM 1639738	A	Tan granular material	100		**ND**	TR	100
1959-PL01-01	EM 1639739	A	Tan granular material w/ white paint	35	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
		B	Gray granular material	65		**ND**	0	100
1959-PL01-02	EM 1639740	A	Tan granular material w/ white paint	100	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 351582-2**
Client: **Landmark Environmental, Inc.**
Client Project Number / P.O.: **16033.001.001**
Client Project Description: **SBNM**
Date Samples Received: **May 31, 2016**
Method: **EPA 600/R-93/116 - Point Count, Bulk**
Turnaround: **3-5 Day**
Date Samples Analyzed: **June 13, 2016**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
1959-PL01-03	EM 1639741	A	Tan granular material w/ white paint	100	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
1959-PL02-01	EM 1639742	A	Tan granular material w/ white paint	100	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
1959-PL02-02	EM 1639743	A	Tan granular material w/ white paint	100	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
1959-PL02-03	EM 1639744	A	Tan granular material w/ white paint	100	**Chrysotile**	**2**	0	98
					Point Count	**0.75**		
1959-PL03-01	EM 1639745	A	Gray granular material	35		**ND**	0	100
		B	Tan granular material w/ white paint	65	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
1959-PL03-02	EM 1639746	A	Gray granular debris	7		**ND**	0	100
		B	Tan granular material w/ white paint	93	**Chrysotile**	**2**	0	98
					Point Count	**0.50**		

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 351582-2**
Client: **Landmark Environmental, Inc.**
Client Project Number / P.O.: **16033.001.001**
Client Project Description: **SBNM**
Date Samples Received: **May 31, 2016**
Method: **EPA 600/R-93/116 - Point Count, Bulk**
Turnaround: **3-5 Day**
Date Samples Analyzed: **June 13, 2016**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
1959-PL03-03	EM 1639747	A	Tan granular material w/ white paint	25	**Chrysotile**	**TR**	0	100
					Point Count	**<0.25**		
		B	Gray granular material w/ tan debris	75		**ND**	0	100
1951-JC01-01	EM 1639748	A	White compound w/ white paint	100		**ND**	0	100
VC-CT01-01	EM 1639749	A	White ceiling tile w/ white paint	100		**ND**	65	35
VC-CT02-01	EM 1639750	A	White ceiling tile w/ white paint	100		**ND**	65	35
VC-CT03-01	EM 1639751	A	Tan ceiling tile w/ white paint	100		**ND**	75	25
VC-JC01-01	EM 1639752	A	White compound w/ white paint	100		**ND**	0	100
VC-SEO1-01	EM 1639753	A	White granular plaster w/ beige paint	100		**ND**	1	99
VC-SEO1-02	EM 1639754	A	White granular plaster w/ beige paint	100		**ND**	1	99
VC-SEO1-03	EM 1639755	A	White granular plaster w/ beige paint	100		**ND**	1	99
VC-SEO1-04	EM 1639756	A	White granular plaster w/ beige paint	100		**ND**	1	99
VC-SEO1-05	EM 1639757	A	White granular plaster w/ beige paint	100		**ND**	1	99

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

Chris Werre
Analyst / Data QA

Due Date: 6-3-6-7
Due Time: —

REI LAB **Reservoirs Environmental, Inc.**

RES 351582

Page 1 of 3

Pager : 303-509-2098

INVOICE TO: (IF DIFFERENT)

Company:	Landmark Environmental, Inc.
Address:	7881 Shaffer Parkway
	Littleton, CO 80127
Project Number and/or P.O. #:	16033.001.001
Project Description/Location:	SBNM

Company:	Same
Address:	

CONTACT INFORMATION:

Contact:	Mike DeMille
Phone:	
Fax:	
Cell/pager:	720-288-5671
Final Data Deliverable Email Address:	mdemille@landmarkenviro.com bhoward@landmarkenviro.com sdavis@landmarkenviro.com bogilvie@landmarkenviro.com CSenz@LandmarkEnviro.com

Contact:	
Phone:	
Fax:	
Cell/pager:	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ___ RUSH (Same Day) ___ PRIORITY (Next Day) X STANDARD (Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. ___3-5 Day

RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day

Organics ___ 24 hr. ___ 3 day ___5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day

Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day

Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

REQUESTED ANALYSIS

PLM - Short report, Long report, Point Count

TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps

PCM - 7400A, 7400B, OSHA

DUST - Total, Respirable

METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan

ORGANICS - METH

MICROBIOLOGY: Salmonella: +/- ; E.coli O157:H7: +/- ; Listeria: +/- ; Aerobic Plate Count: +/- or Quantification ; E.coli: +/- or Quantification ; Coliforms: +/- or Quantification ; S.aureus: +/- or Quantification ; Y & M: +/- or Quantification ; Mold: +/- , Identification , Quantification

SAMPLER'S INITIALS OR OTHER NOTES

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

	Client sample ID number (Sample ID's must be unique)	PLM	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1	1958-SE-01	x		B	1			1639703
2	02	x		B	1			04
3	03	x		B	1			05
4	04	x		B	1			06
5	05	x		B	1			07
6	1958-TSI01-01	x		B	1			08
7	1958-ISI02-01	x		B	1			09
8	1958-SNF01-01	x		B	1			10
9	1958-SNF02-01	x		B	1			11
10	1958-VC01-01	x		B	1			12

Number of samples received: 55 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: Date/Time: 5-28-16

Laboratory Use Only

Received By: Date/Time: 5316 0715 Carrier:

Sample Condition: On Ice Yes / No Sealed Yes / No Intact Yes / No

Temp. (F°) _____

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

Reservoirs Environmental, Inc. (REI LAB)

RES Job # 351582 Page 2 of 3

Submitted by: Landmark Environmental, Inc

	Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella: +/-	MICROBIOLOGY: E.coli O157:H7: +/-	MICROBIOLOGY: Listeria: +/-	MICROBIOLOGY: Aerobic Plate Count: +/- or Quantification	MICROBIOLOGY: E.coli: +/- or Quantification	MICROBIOLOGY: Coliforms: +/- or Quantification	MICROBIOLOGY: S.aureus: +/- or Quantification	MICROBIOLOGY: Y & M: +/- or Quantification	MICROBIOLOGY: Mold: +/- or Quantification	OTHER -	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
11	AD-SED1-01	x																	B	1		163577 13
12	02	x																	B	1		14
13	03	x																	B	1		15
14	04	x																	B	1		16
15	05	x																	B	1		17
16	AD-SED2-01	x																	B	1		18
17	02	x																	B	1		19
18	03	x																	B	1		20
19	04	x																	B	1		21
20	05	x																	B	1		22
21	AD-SED3-01	x																	B	1		23
22	02	x																	B	1		24
23	03	x																	B	1		25
24	04	x																	B	1		26
25	05	x																	B	1		27
26	AD-PL01-01	x																	B	1		28
27	02	x																	B	1		29
28	03	x																	B	1		30
29	04	x																	B	1		31
30	05	x																	B	1		32
31	AD-TSI01-01	x																	B	1		33
32	AD-TSI02-01	x																	B	1		34
33	AD-SWF01-01	x																	B	1		35
34	1936-AIR-01	x																	B	1		36
35	02	x																	B	1		37
36	03	x																	B	1		38
37	1959-PL01-01	x																	B	1		39
38	02	x																	B	1		40
39	03	x																	B	1		41
40	1959-PL02-01	x																	B	1		42
41	02	x																	B	1		43

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

Reservoirs Environmental, Inc.

RES Job # 35182 Page 3 of 3

Submitted by: LANDMARK ENVIRONMENTAL

	Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella: +/-	MICROBIOLOGY: E.coli O157:H7: +/-	MICROBIOLOGY: Listeria: +/-	MICROBIOLOGY: Aerobic Plate Count: +/- or Quantification	MICROBIOLOGY: E.coli: +/- or Quantification	MICROBIOLOGY: Coliforms: +/- or Quantification	MICROBIOLOGY: S.aureus: +/- or Quantification	MICROBIOLOGY: Y & M: +/- or Quantification	MICROBIOLOGY: Mold: +/- or Quantification	OTHER -	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
42	1959-PL02-03	x																	B	1		1639744
43	1959-PL03-01	x																	B	1		45
44	02	x																	B	1		46
45	03	x																	B	1		47
46	1951-JB01-01	x																	B	1		48
47	VC-CT01-01	x																	B	1		49
48	VC-CT02-01	x																	B	1		50
49	VC-CT03-01	x																	B	1		51
50	VC-JC01-01	x																	B	1		52
51	VC-SE01-01	x																	B	1		53
52	02	x																	B	1		54
53	03	x																	B	1		55
54	04	x																	B	1		56
55	05	x																	B	1		57
56	~~06~~	x																	B	1		
57		x																	B	1		
58		x																	B	1		
59		x																	B	1		
60		x																	B	1		
61		x																	B	1		
62		x																	B	1		
63		x																	B	1		
64		x																	B	1		
65		x																	B	1		
66		x																	B	1		
67		x																	B	1		
68		x																	B	1		
69		x																	B	1		
70		x																	B	1		
71		x																	B	1		
72		x																	B	1		

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

Split Sheet

Company: Land mark RES: 351502 SEQ#: 2

Contact: ~~Mike~~ Mike Pemille Due Date: 6/16-6/20

Date/Time: 6/3/16 1pm Time: 1pm

EM Number	Analysis/Turnaround	Volume
1639703	ptct 3-5day	1639722
4	↓	39
5		40
6		1
7		2
12 14		3
15		4
17		5
18		6 7

SPLIT SHEET NEEDS TO BE SCANNED IN AND ATTACHED TO THE ORIGINAL COC FILE AND A COPY NEEDS TO BE GIVEN TO THE ANALYST.

PLEASE ENTER INTO TRACKER CORRECTLY.

Taken by: NC Analyst: Chris

REI LAB **Reservoirs Environmental, Inc.**

February 27, 2015

Subcontract Number:	**NA**
Laboratory Report:	**RES 313494-1**
Project # / P.O. #	**RP130208-39**
Project Description:	**Scottsbluff National Monument**

Henry Gompert
Panhandle Geotechnical & Env. Inc.
818 S. Beltline Hwy East
Scotts Bluff NE 69361

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 313494-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Amber Arnold for

Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0

TABLE PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number: **RES 313494-1**
Client: **Panhandle Geotechnical & Env. Inc.**
Client Project Number / P.O. **RP130208-39**
Client Project Description: **Scottsbluff National Monument**
Date Samples Received: **February 27, 2015**
Method: **EPA 600/R-93/116 - Short, Bulk**
Turnaround: **2 Hour**
Date Analyzed: **February 27, 2015**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem-Act=Tremolite-Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content Mineral	Asbestos Content Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
AI1	EM 1356348	A	Brown insulation	100		**ND**	85	15
AI2	EM 1356349	A	Brown insulation	100		**ND**	85	15
AB1	EM 1356350	A	Gray micaceous material w/ off white paint	100	**Chrysotile** **Trem-Act**	**5** **TR**	0	95

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

Analyzed by: Liu Wenlong

Data QA: Amber Arnold

Due Date: 22715
Due Time: 345

RES 313494

Reservoirs Environmental, Inc.

REI LAB

5801 Logan St. Denver, CO 80216 • Ph: 303-864-1288 • Fax 303-477-4275 • Toll Free 1866 RESI-ENV
Pager: 303-505-2096

Page 1 of 1

INVOICE TO: (IF DIFFERENT)

Company: Panhandle GeoTechnical & Environmental
Address: 818 S. Baitline Hwy E.
Scottsbluff NE 69361

Company:
Address:

CONTACT INFORMATION:

Contact: Henry Gompert
Phone: 308-632-6735
Fax: 308-635-7807
Cell/pager:

Contact:
Phone:
Fax:
Cell/pager:

Final Data Deliverable Email Address: hgompert@panhandlegeotech.com

Project Number and/or P.O. #: RP130208-38
Project Description/Location: Scottsbluff National Monument

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ✓ RUSH (Same Day) ___ PRIORITY (Next Day) ___ STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. ___ 3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___ 10 day
Organics ___ 24 hr. ___ 3 day ___ 5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 Hr. ___ 2 Day ___ 3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___ 3-5 Day
Mold ___ RUSH ___ 24 Hr ___ 48 Hr ___ 3 Day ___ 5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

Special Instructions:
Please E-mail results

REQUESTED ANALYSIS

Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s)	RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella +/-	MICROBIOLOGY: E.coli O157:H7 +/-	MICROBIOLOGY: Listeria +/-	MICROBIOLOGY: Aerobic Plate Count +/- or Quantification	MICROBIOLOGY: E.coli +/- or Quantification	MICROBIOLOGY: Coliforms +/- or Quantification	MICROBIOLOGY: S.aureus +/- or Quantification	MICROBIOLOGY: Y & M +/- or Quantification	MICROBIOLOGY: Mold +/-, Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh:mm a/p	LAB NOTES: EMI Number (Laboratory Use Only)
1 AI1	✓																			B	1	2-26-15		1356348
2 AI2	✓																			B	1	2-26-15		9
3 AB1	✓																			B	1	2-26-15		SD
4																								
5																								
6																								
7																								
8																								
9																								
10																								

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Sweb = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

Number of samples received: _____ (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: Marvin Howard Date/Time: 2-26-15 3:40

Sample Condition: Temp. (F°) _____ On Ice Yes / No Sealed Yes / No Intact Yes / No

Laboratory Use Only

Received By: _____ Date/Time: 22715 145 Carrier: FE

Results:	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials
	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials

Projected Costs for Asbestos Abatement

Location	ACM Description	Category	Quantity	Units	Unit $ Low	Unit $ High	Extended $ Low	Extended $ High
Admin Bldg attic (1)	Air cell pipe insulation debris	Friable	100	linear ft	$25	$35	$2,500	$3,500
Admin Bldg furnace flue	HVAC duct seam paper	Friable	400	linear ft	$8	$12	$3,200	$4,800
Admin Bldg copy room	Sheet vinyl flooring	Friable	30	ft2	$10	$12	$300	$360
Residence north side basement	HVAC duct paper wrap	Friable	150	linear ft	$8	$12	$1,200	$1,800
Residence north side basement	Mudded pipe fitting	Friable	20	Each	$50	$75	$1,000	$1,500
Visitors Center Ceiling Jackson Rm	Acoustical texture/popcorn ceiling	Friable	600	ft2	$15	$20	$9,000	$12,000

1) Quantity is a rough estimate. Additional material could be present in inaccessible areas.

All estimates are preliminary in nature and are solely for financial planning purposes. Estimates were not obtained through the solicitation of written bids.

Attachment B

LEAD DATA FOR PAINT AND SOILS

LANDMARK ENVIRONMENTAL, INC.

TABLE 2. LEAD CONTAINING PAINT SAMPLING RESULTS		
CLIENT: Mundus Bishop	**PROJECT NUMBER:** 16033.001.001 - SBNM	**DATE:** May 26, 2016
		INSPECTOR: M. DeMille

Sample #	Building	Location	Component	Substrate	Color	Analytical Results
AD-LBP-01	Administration	Exterior-East	Wall	Stucco	Tan	BRL
AD-LBP-02		Exterior-North	Fence	Wood	Brown	0.055
AD-LBP-03		Exterior- North	Gutter	Metal	Brown	0.0082
AD-LBP-04		Exterior- North	Down Spout	Metal	Tan	0.61
AD-LBP-05		South Office	Wall	Plaster	Off White	BRL
AD-LBP-06		Restroom	Window Sill	Wood	Tan	0.16
AD-LBP-07		Furnace Closet	Wall	Plaster	White	BRL
1981-LBP-01	Maintenance	Exterior-South	Window	Wood	Brown	BRL
1959-LBP-01		Interior dividing wall Bay 3/4	Floor	Concrete	Yellow	BRL
1959-LBP-02		Bay 4	Wall	CMU	White	BRL
1959-LBP-03		Bay 4	Ceiling	Gypsum Board	Off White	0.047
1958-LBP-01	Residence	Exterior-East Side	Wall	Plaster	Tan	BRL
1958-LBP-02		Exterior	Window Frame	Wood	Dark Brown	BRL
1958-LBP-03		Entrance	Door	Wood	Dark Brown	BRL
1958-LBP-04		Kitchen	Wall	Gypsum Board	White	0.20
1958-LBP-05		Hallway	Wall	Gypsum Board	Purple	0.027
1958-LBP-06		Living Room	Wall	Gypsum Board	Green	BRL
1958-LBP-07		Living Room	Flue	Metal	Black	BRL
VC-LBP-01	Visitors Center	Basement	Floor	Concrete	Grey	BRL
VC-LBP-02		Basement	Wall	Concrete	White	BRL
VC-LBP-03		Basement	HVAC Duct	Metal	Off White	0.014

BRL= Below Recordable Limits

LANDMARK ENVIRONMENTAL, INC.

TABLE 3. RESULTS OF LEAD IN SOIL SAMPLING		
CLIENT: Mundus Bishop	**PROJECT NUMBER:** 16033.001.001 - SBNM	**DATE:** May 26, 2016
		INSPECTOR: M. DeMille

SAMPLE #	LOCATION	COMPONENT	SAMPLE TYPE	U.S. EPA SCREENING LEVEL RESIDENTIAL SOILS (MG/KG)	ANALYTICAL RESULTS (MG/KG) RES# 351581-1
AD-LBP-DL-01	Administration Building 1938,1948 & 1995- dripline	exterior soils	Composite (10 aliquot)	400	25.0
AD-LBP-ODL-01	Administration Building 1938,1948 & 1995- 3' out from dripline	exterior soils	Composite (10 aliquot)	400	24.6
MB-LBP-DL-01	Maintenance Garage- dripline	exterior soils	Composite (10 aliquot)	400	BRL
MB-LBP-ODL-01	Maintenance Garage- 3' out from dripline	exterior soils	Composite (10 aliquot)	400	BRL
1958-LBP-DL-01	Residence 1958- dripline	exterior soils	Composite (10 aliquot)	400	23.5
1958-LBP-ODL-01	Residence 1958- 3' out from dripline	exterior soils	Composite (10 aliquot)	400	15.0
VC-LBP-DL-01	Visitors Center 1934, 1936,1937 &1946- dripline	exterior soils	Composite (10 aliquot)	400	54.6
VC-LBP-ODL-01	Visitors Center 1934, 1936,1937 &1946- 3' out from dripline	exterior soils	Composite (10 aliquot)	400	50.8

BRL = Below Recording Limits

REI LAB **Reservoirs Environmental, Inc.**

June 6, 2016

Laboratory Code:	**RES**
Subcontract Number:	**NA**
Laboratory Report:	**RES 351580-1**
Project # / PO #:	**16033.001.001**
Project Description:	**SBNM**

Mike DeMille
Landmark Environmental, Inc.
7881 Shaffer Parkway
Littleton CO 80217

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. The laboratory is currently proficient in both IHPAT & ELPAT programs respectively.

Reservoirs has analyzed the following sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Inductively Coupled Plasma (AES-ICP) per your request. Reported sample results were not blank corrected. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

RES 351580-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you should have any questions about this report, please feel free to call me at 303-964-1986.

Sincerely,



Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

5801 Logan St., Suite 100
Denver CO 80216

TABLE ANALYSIS: LEAD IN PAINT

RES Job Number: **RES 351580-1**
Client: **Landmark Environmental, Inc.**
Client Project Number / P.O.: **16033.001.001**
Client Project Description: **SBNM**
Date Samples Received: **May 31, 2016**
Analysis Type: **USEPA SW846 3050B / AA (7420)**
Turnaround: **3-5 Day**
Date Samples Analyzed: **June 3, 2016**

Client ID Number	Lab ID Number	Reporting Limit (%)	LEAD CONCENTRATION (%)
1958-LBP-01	EM 1639674	0.0020	BRL
1958-LBP-02	EM 1639675	0.0034	BRL
1958-LBP-03	EM 1639676	0.0038	BRL
1958-LBP-04	EM 1639677	0.0035	0.20
1958-LBP-05	EM 1639678	0.0034	0.027
1958-LBP-06	EM 1639679	0.0060	BRL
1958-LBP-07**	EM 1639680	0.10	BRL
AD-LBP-01	EM 1639681	0.0028	BRL
AD-LBP-02	EM 1639682	0.0014	0.055
AD-LBP-03	EM 1639683	0.0041	0.0082
AD-LBP-04	EM 1639684	0.0050	0.61
AD-LBP-05	EM 1639685	0.0075	BRL
AD-LBP-06	EM 1639686	0.0052	0.16
AD-LBP-07	EM 1639687	0.0050	BRL
VC-LBP-01	EM 1639688	0.0025	BRL
VC-LBP-02	EM 1639689	0.0021	BRL
VC-LBP-03	EM 1639690	0.0031	0.014
1981-LBP-01	EM 1639691	0.0046	BRL
1959-LBP-01	EM 1639692	0.0021	BRL
1959-LBP-02	EM 1639693	0.0049	BRL
1959-LBP-03	EM 1639694	0.0032	0.047

*** Unless otherwise noted all quality control samples performed within specifications established by the laboratory.**
**** Sample contained insufficient sample volume to accurately quantify per EPA method 3050B. Therefore, results should be considered as qualitative only.**

Analyst / Data QA: Renee A. Cortez

BRL = Below Reporting Limit

Due Date: 6-3-17
Due Time: —

Reservoirs Environmental, Inc.

RES 351580
Page 1 of 2

Pager : 303-509-2098

INVOICE TO: (IF DIFFERENT)		CONTACT INFORMATION:	
Company: Landmark Environmental, Inc.	Company: Same	Contact: Mike DeMille	Contact:
Address: 7881 Shaffer Parkway	Address:	Phone:	Phone:
Littleton, CO 80127		Fax:	Fax:
		Cell/pager: 720-288-5671	Cell/pager:
Project Number and/or P.O. #: 16033.001.001		Final Data Deliverable Email Address: mdemille@landmarkenviro.com bhoward@landmarkenviro.com	
Project Description/Location: SBNM		sdavis@landmarkenviro.com bogilvie@landmarkenviro.com CSENZ@Landmarkenviro.com	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ____ RUSH (Same Day) ___ PRIORITY (Next Day) ___STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. X 3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

REQUESTED ANALYSIS

PLM - Short report, Long report, Point Count
TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps
PCM - 7400A, 7400B, OSHA
DUST - Total, Respirable
METALS - Analyte(s) ____Pb RCRA 8, TCLP, Welding Fume, Metals Scan
ORGANICS - METH
MICROBIOLOGY: Salmonella: +/-; E.coli O157:H7: +/-; Listeria: +/-; Aerobic Plate Count: +/- or Quantification; E.coli: +/- or Quantification; Coliforms: +/- or Quantification; S.aureus: +/- or Quantification; Y & M: +/- or Quantification; Mold: +/-, Identification, Quantification
SAMPLER'S INITIALS OR OTHER NOTES

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

	Client sample ID number (Sample ID's must be unique)	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1	1958-LBP-01		P	1			1639274
2	02		P	1			75
3	03		P	1			76
4	04		P	1			77
5	05		P	1			78
6	06		P	1			79
7	07		P	1			80
8	AD-LBP-01		P	1			81
9	02		P	1			82
10	03		P	1			83

Number of samples received: 21 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: Date/Time: 5/28/16

Laboratory Use Only
Received By: Date/Time: 5/31/16 @ 715 Carrier: hand

Sample Condition: On Ice Yes / No; Sealed Yes / No; Intact Yes / No
Temp. (F°) ____

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

Reservoirs Environmental, Inc.

RES Job # 35159 Page 2 of 2

Submitted by: **Landmark Environmental, Inc**

	Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella: +/-	MICROBIOLOGY: E.coli O157:H7: +/-	MICROBIOLOGY: Listeria: +/-	MICROBIOLOGY: Aerobic Plate Count: +/- or Quantification	MICROBIOLOGY: E.coli: +/- or Quantification	MICROBIOLOGY: Coliforms: +/- or Quantification	MICROBIOLOGY: S.aureus: +/- or Quantification	MICROBIOLOGY: Y & M: +/- or Quantification	MICROBIOLOGY: Mold: +/- or Quantification	OTHER -	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
11	AD-LBP-04					X													P	1			1639284
12	05					X													P	1			85
13	06					X													P	1			86
14	07					X													P	1			87
15	VC-LBP-01					X													P	1			88
16	02					X													P	1			89
17	03					X													P	1			90
18	~~04~~					X													P	1			—
19	1981-LBP-01					X													P	1			91
20	1959-LBP-01					X													P	1			92
21	02					X													P	1			93
22	03					X													P	1			94
23						X													P	1			
24						X													P	1			
25						X													P	1			
26						X													P	1			
27						X													P	1			
28						X													P	1			
29						X													P	1			
30						X													P	1			
31						X													P	1			
32						X													P	1			
33						X													P	1			
34						X													P	1			
35						X													P	1			
36						X													P	1			
37						X													P	1			
38						X													P	1			
39						X													P	1			
40						X													P	1			
41						X													P	1			

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

REI LAB **Reservoirs Environmental, Inc.**

June 6, 2016

Laboratory Code:	**RES**
Subcontract Number:	**NA**
Laboratory Report:	**RES 351581-1**
Project # / PO #:	**16033.001.001**
Project Description:	**SBNM**

Mike DeMille
Landmark Environmental, Inc.
7881 Shaffer Parkway
Littleton CO 80217

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. The laboratory is currently proficient in both IHPAT & ELPAT programs respectively.

Reservoirs has analyzed the following sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Inductively Coupled Plasma (AES-ICP) per your request. Reported sample results were not blank corrected. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

RES 351581-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those authorized by the client. The results described in this report only apply to the samples analyzed. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you should have any questions about this report, please feel free to call me at 303-964-1986.

Sincerely,

Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC.

5801 Logan St., Suite 100
Denver CO 80216

TABLE ANALYSIS: LEAD IN SOIL

RES Job Number:	**RES 351581-1**
Client:	**Landmark Environmental, Inc.**
Client Project Number / P.O.:	**16033.001.001**
Client Project Description:	**SBNM**
Date Samples Received:	**May 31, 2016**
Analysis Type:	**USEPA SW846 3050B / AA (7420)**
Turnaround:	**3-5 Day**
Date Samples Analyzed:	**June 3, 2016**

Client ID Number	Lab ID Number	Reporting Limit (mg/kg)	LEAD CONCENTRATION (mg/kg)
1958-LBP-DL-01	EM 1639695	18.4	23.5
1958-LBP-ODL-01	EM 1639696	15.0	15.0
MB-LBP-DL-01	EM 1639697	18.3	BRL
MB-LBP-ODL-01	EM 1639698	20.1	BRL
AD-LBP-DL-01	EM 1639699	16.0	25.0
AD-LBP-ODL-01	EM 1639700	18.1	24.6
VC-LBP-DL-01	EM 1639701	16.1	54.6
VC-LBP-ODL-01	EM 1639702	19.3	50.8

*** Unless otherwise noted all quality control samples performed within specifications established by the laboratory.**

Renee A. Cortez

Analyst / Data QA:_____

BRL = Below Reporting Limit

Due Date: 6-3-6-7
Due Time: ____

Reservoirs Environmental, Inc.

RES 351581

Job #: ____
Page 1 of 1

Pager : 303-509-2098

INVOICE TO: (IF DIFFERENT)		CONTACT INFORMATION:	
Company: Landmark Environmental, Inc.	Company: Same	Contact: Mike DeMille	Contact:
Address: 7881 Shaffer Parkway	Address:	Phone:	Phone:
Littleton, CO 80127		Fax:	Fax:
		Cell/pager: 720-288-5671	Cell/pager:
Project Number and/or P.O. #: 160033.001.001		Final Data Deliverable Email Address: mdemille@landmarkenviro.com bhoward@landmarkenviro.com	
Project Description/Location: SBNM		sdavis@landmarkenviro.com bogilvie@landmarkenviro.com CSanz@LandmarkEnviro.com	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ____ RUSH (Same Day) ___ PRIORITY (Next Day) ___STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. X 3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

REQUESTED ANALYSIS

PLM - Short report, Long report, Point Count
TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps
PCM - 7400A, 7400B, OSHA
DUST - Total, Respirable
METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan
ORGANICS - METH
MICROBIOLOGY: Salmonella: +/-; E.coli O157:H7: +/-; Listeria: +/-; Aerobic Plate Count: +/- or Quantification; E.coli: +/- or Quantification; Coliforms: +/- or Quantification; S.aureus: +/- or Quantification; Y & M: +/- or Quantification; Mold: +/-, Identification, Quantification
SAMPLER'S INITIALS OR OTHER NOTES

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

	Client sample ID number (Sample ID's must be unique)	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1	1958-LBP-DL-01		S	1			1639605
2	ODL-01		S	1			06
3	MB-LBP-DL-01		S	1			07
4	ODL-01		S	1			08
5	AD-LBP-DL-01		S	1			09
6	ODL-01		S	1			7620
7	VC-LBP-DL-01		S	1			01
8	VC-LBP-ODL-01		S	1			02
9							
10							

Number of samples received: 8 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: M. DeMille Date/Time: 5-26-16

Laboratory Use Only
Received By: Date/Time: 5/31/16 @ 7a Carrier: FB

Sample Condition: On Ice Yes / No; Sealed Yes / No; Intact Yes / No
Temp. (F°) ____

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

Attachment C

INVENTORY OF OTHER REGULATED BUILDING MATERIALS

LANDMARK ENVIRONMENTAL, INC.

TABLE 4. OTHER REGULATED BUILDING MATERIALS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Administrative Building	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/26/16

Area	Material	Material Location/Direction	Quantity	Comments
Admin Building	Smoke Detector		5	
Admin Building	Emergency Lights		2	
Admin Building	Fluorescent Tubes		20	
Admin Building	Bulbs		10	
Admin Building	Mercury Switches			
Admin Building	CFF			

Definitions:

F – Floor	N - North
C – Ceiling	S - South
W – Wall	E - East
O – Other	W - West

HAZERDOUS/REGULATED BUILDING MATERIALS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Maintenance Building	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/26/16

Area	Material	Material Location/Direction	Quantity	Comments
Maintenance Office	CFCs Air Conditioner	W/EW	3	
Maintenance Office	PCB Ballasts	C	5	
Maintenance Office	Fluorescent Tubes	C	8	
Shop Areas	PCB Ballasts	C	13	
Shop Areas	Fluorescent Tubes	C	26	

Definitions:

F – Floor	N - North
C – Ceiling	S - South
W – Wall	E - East
O – Other	W - West

HAZERDOUS/REGULATED BUILDING MATERIALS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Residence	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/26/16

Area	Material	Material Location/Direction	Quantity	Comments
	Smoke Detector		7	
	Emergency Lights			
	Fluorescent Tubes		7	
	Bulbs		30	
	Mercury Switches			
	CFI			

Definitions:

F – Floor	N - North
C – Ceiling	S - South
W – Wall	E - East
O – Other	W - West

HAZERDOUS/REGULATED BUILDING MATERIALS			
PROJECT NAME:	Scottsbluff National Monument	**LANDMARK PROJECT NUMBER:**	16033.001.001
LOCATION:	Visitor Center	**INSPECTOR:**	Mike DeMille
CLIENT:	Mundus Bishop	**DATE:**	5/26/16

Area	Material	Material Location/Direction	Quantity	Comments
	Smoke Detector		13	
	Emergency Lights		5	
	Fluorescent Tubes			
	Bulbs			
	Mercury Switches			
	CFI			

Definitions:

F – Floor	N - North
C – Ceiling	S - South
W – Wall	E - East
O – Other	W - West

Attachment D

RADON SAMPLING DATA

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-0327
http://www.EMSL.com cinnaminsonradonlab@emsl.com

EMSL Order:	381605868
CustomerID:	LMEN78
CustomerPO:	16033.001.001
ProjectID:	

Attn: **Michael DeMille**
Landmark Environmental, Inc.
7881 Shaffer Parkway
Littleton, CO 80127

Phone:	(720) 283-8974
Fax:	(720) 283-8666
Received:	06/03/16 11:10 AM
Analysis Date:	6/3/2016
Collected:	5/25/2016

Project: **Scottsbluff National Monument**

Test Site: **Scottsbluff National Monument**
Gering, NE 69341

Test Report: Radon in Air Test Results

Samples for EMSL Kit 147426

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
248304	Visitor's Center - Basement Computer	6.6	5/25/2016 11:36:00 AM	5/27/2016 11:40:00 AM	62	60	Customer
381605868-0001							
Sample Notes:							
248313	Visitor's Center - Basement Computer	7.2	5/25/2016 11:36:00 AM	5/27/2016 11:40:00 AM	62	60	Customer
381605868-0002							
Sample Notes:							
Summary for EMSL Kit 147426		**Average Radon Result:**	**6.9 pCi/L**				

Samples for EMSL Kit 147427

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
248312	Visitor's Center - Basement	4.6	5/25/2016 11:27:00 AM	5/27/2016 11:45:00 AM	62	60	Customer
381605868-0003							
Sample Notes:							
248336	Visitor's Center - Basement	4.6	5/25/2016 11:27:00 AM	5/27/2016 11:45:00 AM	62	60	Customer
381605868-0004							
Sample Notes:							
Summary for EMSL Kit 147427		**Average Radon Result:**	**4.6 pCi/L**				

The radon test was performed using a liquid scintillation radon detector/s and counted on a liquid scintillation counter using approved EPA testing protocols for Radon in Air testing. The EPA recommends fixing your home if the average of two short-term tests taken in the lowest lived-in level of the home show radon levels that are equal to or greater than 4.0pCi/L.
The EPA recommends retesting your home every two years.

Please contact EMSL Analytical, Inc. or your State Health Department for further information.
All procedures used for generating this report are in complete accordance with the current EPA protocols for the analysis of Radon in Air.

Report Note

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-0327
http://www.EMSL.com cinnaminsonradonlab@emsl.com

EMSL Order:	381605868
CustomerID:	LMEN78
CustomerPO:	16033.001.001
ProjectID:	

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Test Report: Radon in Air Test Results

Analyst(s)

Tiffanie Cosgrove (4)

Laura Freeman, Radon Laboratory Manager &
Peixue Ma, Ph.D, NJ Radon Measurement Specialist NJ MES 13502

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. In no event shall EMSL be liable to a client or any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder. The test results meets all NELAC requirements unless otherwise specified. Accreditations: NRSB ARL6006, NJ DEP 03036, MEB 92525, PA 2573, IN 00455, IA L00032, RI RAS-024, ME 20200C, NE RMB-1083, NY ELAP 10872, NM 885-10L, FL RB2034, OH RL-39, NRPP #106178AL, KS-LB-0005

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ Accreditations: NRSB ARL6006, NJ DEP 03036, MEB 92525, PA 2573, IN 00455, IA L00032, RI RAS-024, ME 20200C, NE RMB-1083, NY ELAP 10872, NM 885-10L, FL RB2034, OH RL-39, NRPP #106178AL, KS-LB-0005.

Initial report from 06/06/2016 09:22:54

Please visit www.radontestinglab.com