Historic Housing Area
Historic Structures Report

HS-06 Quarters

Wind Cave National Park

Volume V of VIII

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NPS PMIS # 158029

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Cover Photo:
HS-06 Quarters Existing Structure, View East. (SRJA 2014)

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Introduction

Volume I of the Wind Cave National Park Historic Housing Area Historic Structures Report (HSR) covers the history of the development of the park and the historic housing area. This individual Volume V is to serve as a guide for the future caretaking of this significant property, HS-06 Quarters. This volume focuses on the individual history, review of existing conditions and treatment recommendations unique to HS-06.

The one-story HS-06 Quarters was originally built in 1934. The 1,100 square feet residence currently serves as seasonal housing for park staff. The house is built into the hillside and faces east toward the Administration Building with a raised stone terrace across the front of the house (Figures 2 and 5). HS-06 is in nearly original 1934 form, with very few alterations. The house is visible from the public right of way and should be preserved in its current condition to the extent possible.

The shell of the HS-06 is in overall good condition, having been very well maintained for the last 81 years. Raised grade along the west and north sides of the house is causing deterioration of the stucco exterior. The stone foundation requires only spot repointing, but also requires monitoring for settlement. The southeast corner stone foundation and the south and east walls of the stone terrace were underpinned in 2004. Cracks are forming at the joint between the un-stabilized and the stabilized portions of the foundation, as well as diagonally across the stone porch. The original wood windows are missing and require replacement in several of the rooms, in order to assist with the energy efficiency of the house. Besides these issues, the house requires basic maintenance and rehabilitation.

With the ultimate treatment recommendation to *Rehabilitate* the building, great care shall be taken to rehabilitate and maintain the house in the gentlest means possible, while preserving the house's most significant features.

Significant Features

Care should be taken to preserve the following significant historic features routine maintenance and through future rehabilitation projects.

Exterior:

- Site – Sloped site. House built into grade.
- Massing – One story with hipped and gable roofs.
- Roofline – Gable, hipped and low slope roofs.
- Basic Footprint – Square with projections on the east, south and west sides.
- Porches, stoops and stairs – Stone front terrace and front steps with battered stone walls.
- Stonework—Native stone laid in a random ashlar pattern. Battered exposed foundations.
- Chimneys – Native stone laid in a random ashlar pattern.
- Stucco – Spanish stucco.

- Gable – Wood horizontal siding with louver.
- Trim – Wood cornice, typical throughout historic housing area.
- Patterns of fenestration – Original window and door openings.
- Windows – No original window sash remain. Original trim remains under the metal panning.
- Doors – Original V-joint tongue and groove front door with original hardware. Original French Doors to front terrace.
- Light fixtures – Front porch wall fixture.

Interior:

- Original wood doors and hardware.
- Millwork, including door and window trim, baseboards, picture rail, scuttle access.
- Plaster wall and ceiling finishes.
- Historic flooring (may remain below installed laminate and carpeting).
- Light Fixtures – Living Room sconces.
- Plan and room layout (Living areas and bedrooms most important. Kitchen and bath finishes have been altered).

History and Significance of HS-06 Quarters

Note: See Volume One for a full bibliography and additional information about the early development of the Historic Housing Area of Wind Cave National Park.

HS-06, now known as Quarters 6, was built in 1934 as an employee residence. The building was built by the Hot Springs Lumber Co.[1] Plans for the building were completed by the National Park Service (NPS) Branch of Plans and Design in October of 1933 and construction was concluded in August 1934.[2] The plans were drawn by "R.W.A." of the National Park Service.[3] This is one of three buildings constructed by the Hot Springs Lumber Company at Wind Cave National Park between April and June, 1934. The contract also built HS-03, the Superintendent's Residence, and HS-11, a large garage and machine shop. Monthly superintendent's reports show that the construction contract was awarded April 6, and the new house was ready to occupy in August. The first resident was Chief Clerk, Mr. Parsons, who moved in on August 9, 1934.

The site for the new house was enhanced by extensive landscaping, which was installed by CCC crews soon after construction was completed (Figure 8). A landscape plan was drawn by S. Serrano of the Denver office of the National Park Service Branch of Plans and Design a few months after Parsons moved in,[4] and the completed landscaping was featured in a photo of the house published in 1937. The photo was included in an article about CCC work written by park superintendent Edward D. Freeland.[5]

The full basement of the house was added about the same time the landscaping was finished. This work was also done by CCC crews, who added basements to three residences in 1937.[6] New windows were installed in 1952, and a small enclosed back porch was added in 1956. The new porch created an enclosed entry to the basement, which was originally accessible only from outside the house.

A 1961 management plan which called for the demolition of this and other houses across from the administration building as soon as they had "served reasonably their useful lives." It was not followed, and in 1986 all of the buildings in the housing area, including this one, were reclassified as "Historical Buildings."[7] HS-06 Quarters is a contributing resource in the Wind

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[1] Kenneth W. Karsmizki, 1995, "Wind Cave National Park Administrative and Utility Area Historic District," *National Register of Historic Places,* 7.45b.
[2] Appendix A, HS-06, WICA_108_3004A_[id278447].; June 7, 1934 Superintendent's Monthly Report, Wind Cave National Park. (Copy on file at the WICA Library.) Hereafter referred to by month and year as WICA Superintendent's Monthly Report.
[3] Appendix A, HS-06, WICA_108_3004A_[id278447].
[4] Appendix A. HS-06, WICA_108_301804A_[id3227].
[5] Edward D. Freeland, "Development of National Park Areas in the Black Hills by the CCC," *Black Hills Engineer*, Dec. 1937: 26-32.
[6] Jan. 1937 WICA Superintendent's Monthly Report.
[7] "Master Plan for the Preservation and Use of Wind Cave National Park," Mission 66 Edition." (WICA) November 1961: 9.

Cave Historic District and it is significant for the link to the early years of park development and the work of the CCC.

Current Title: HS-06 Quarters **FMSS Asset Number 27933** **LCS ID 010744**		
Previous Name	**Date of Name**	**Source of Name and Notes**
Employee's Residence	1934	Plans, Superintendent's Reports
Employee's Residence #2	1940	1942 Master Plan
Q-06	ca. 1949-1995	Maintenance Department Files
Residence 6	1963	1963 Site Plan
#6 Residence	1976	Classified Structure Field Inventory Report
Residence 1934	1988	1988 Resource Management Plan
Employee's Residence (HS-6)	1995	National Register Nomination
Quarters 6	2000	Current WICA Staff, LCS
H-B-06 Employee Residence (HS-6)	2004	Cultural Landscape Report

Figure 1. Table of Previous Titles.

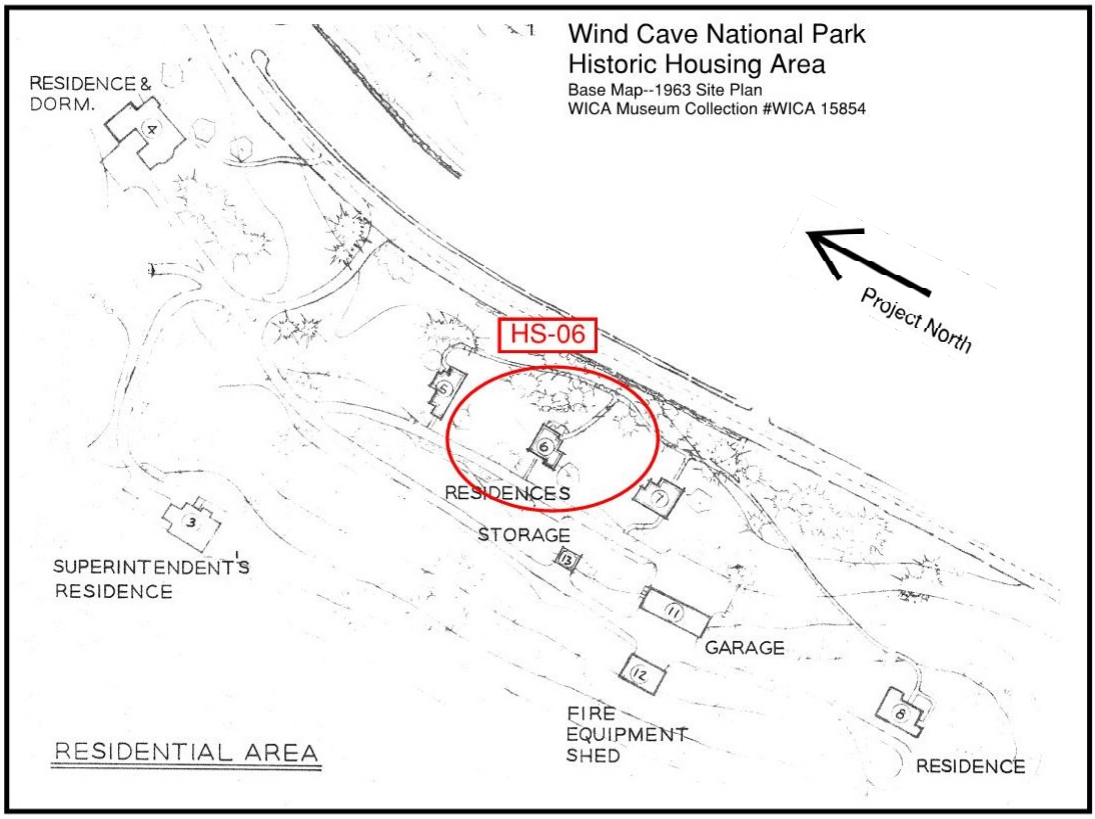


Figure 2. Location Map.

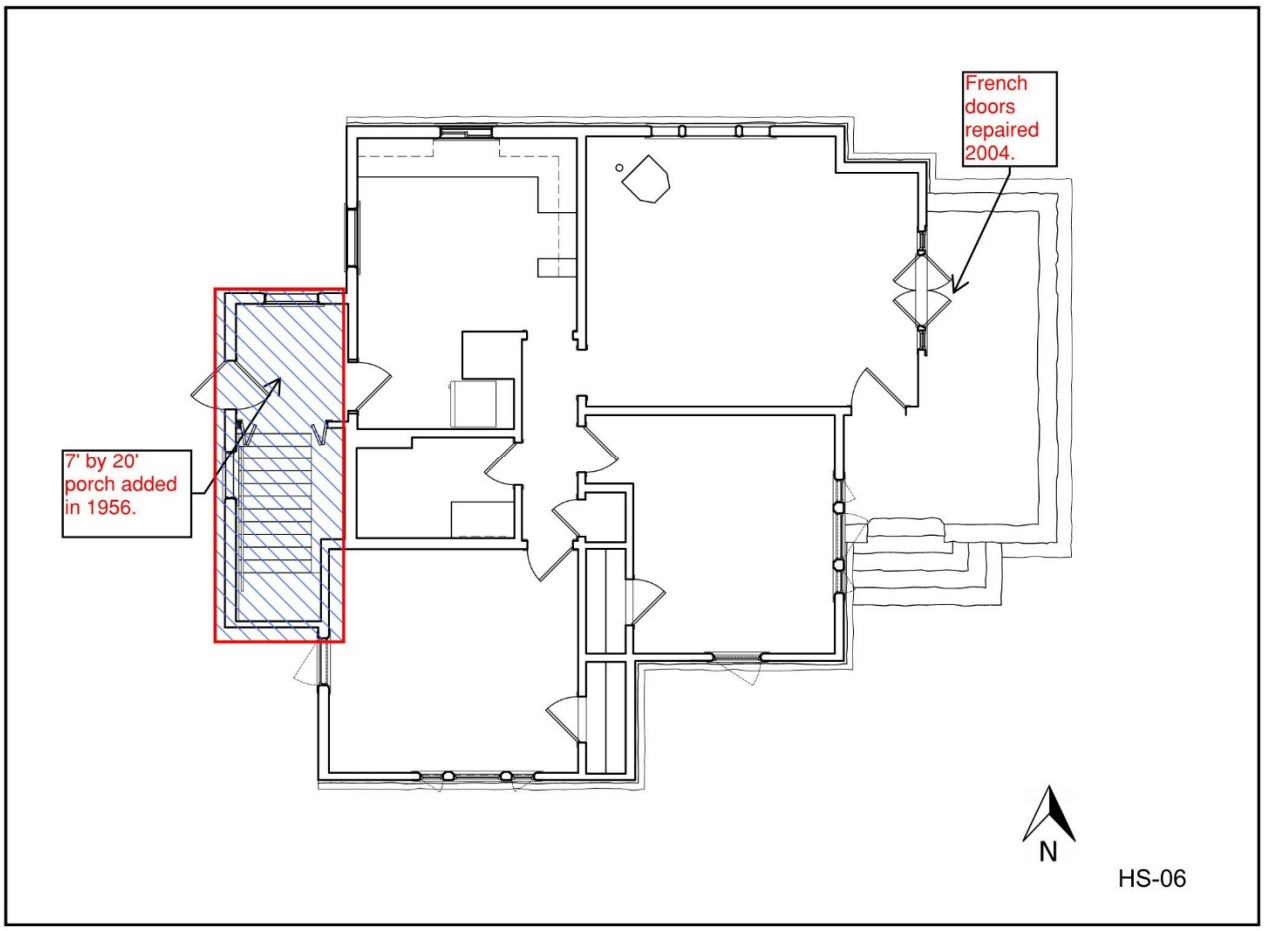


Figure 3. Summary of Alterations.

Timeline of Major Events and Alterations.

Historic Primary Function Use: Domestic (Residential) [List of Classified Structures.]
Current Primary Function and Use: Domestic (Residential) [List of Classified Structures.]

1933
October 10, 1933. Plans completed for construction of Employee's Residence (HS-06). Plans were drawn by "R.W.A." of the National Park Service Branch of Plans and Design, recommended by W. G. Carnes, Chief Architect, 10/12/1933, and approved by Arno B. Camerer, Director on 11/28/1933. [Appendix A.]

The design of the house has been attributed to NPS architect Howard Baker, per the List of Classified Structures, but no evidence that Baker was directly involved has been found.

1934
April 6, 1934. Contract let to Hot Springs Lumber Co, for "two residences and a machine shop." (HS-03, HS-06, HS-11) $19,475.69. [April, 1934 WICA Superintendent's Monthly Report.] A maintenance department entry dated 1959 values the building at $7,000, which may be the amount assigned to this portion of the original contract. [Maintenance Department Files.]

August 11, 1934. Building completed. [Spreadsheet; June 7, 1934 WICA Superintendent's Monthly Report.] Chief Clerk Mr. Parsons, moved in Aug 9, 1934. [1934 WICA Annual Superintendent's Report.]

October 15, 1934. Plans completed for landscape planting of Employee's Residence (HS-06). Plans were drawn by "S. S." of the National Park Service Branch of Plans and Design, recommended by W. G. Carnes, Chief Architect, 10/23/19343, and approved by Arno B. Camerer, Director on 11/15/1934. S. S. was probably Sam Serrano, see Feb. 25, 1937 entry below. [Appendix A.]

1937
January 20, 1937. "Howard W. Baker and S. Serrano arrived in the park in the morning, made an inspection of the projects being worked on that require landscape supervision, and left the park the following day for the Badlands." "An ECW crew, under supervision of stone mason, completed stone retaining walls in basement of employees' residences. (Possibly HS-05, HS-06 and HS-07.) They started work on third basement later part of the month." [Jan. 1937 WICA Superintendent's Monthly Report.]

1949
Value $9,850.00 [Maintenance Department Files.]
Property file lists living room oak floor with remaining floors fir. [Karsmizki, "Administrative and Utility Area NR Nomination," 7.45.]

1951
June 15. Project completion Report. Replaced hot water plant and modernized piping system. [Maintenance Department Files.]

1952
Window replacement [Karsmizki, “Administrative and Utility Area NR Nomination,” 7.46.]

September 9, 1952. Install fiberglass between walls and attics. Holes drilled through stucco and plugged. [Maintenance Department Files.]

1956
Plans for porch show 7’x20’ enclosed addition and enclosed stairway to basement. [Maintenance Department Files.]

1957
Redecorate bath, new tile and fixtures, re-circuit electric system, paint outside trim and repair stucco, repair basement windows and paint. [Maintenance Department Files.]

1961
“Master Plan for the Preservation and Use of Wind Cave National Park: Mission 66 Edition.” The plan called for the demolition of “residences across the road from the Administration building” (probably HS-05, HS-06, HS-070 once they had “served reasonably their useful lives.” [“Master Plan for the Preservation and Use of Wind Cave National Park,” Mission 66 Edition (WICA) November 1961: 9.]

1965
January. New hot water heater. [Maintenance Department Files.]

1974
June. Rewire; October, ca. Reshingled. [Maintenance Department Files.]

1975
September and October. Aluminum panels installed in bathroom, paint and patch walls. [Maintenance Department Files.]

1976
Building inventory states stone veneer used on foundation but plans do not show veneer. [Karsmizki, “Administrative and Utility Area NR Nomination,” 7.45.]

1980
May. New kitchen cabinets and counters. [Maintenance Department Files.]

1980-81
Storm doors and windows. Solar hot water. [Maintenance Department Files.]

1982
August 20, 1982. Removal of existing wood shingle and reroofed with asphalt shingles. Direct Cost $3,921.67. (Recorded Date 23 Apr 1987) [Maintenance Department Files.]

1985
August 23, 1985. "Old 2 wire system removed, installed new wiring, grounding, entrance to weather head, panels and baseboard electric heaters. Clint's Electric. Direct Cost $6,666.33. (Recorded Date 30 May 1986.) October. Replace sliding shower door. [Maintenance Department Files.]

1986
July. Building transferred from G.L. acct. 210 General Buildings to G.L. acct. 215 Historical Buildings (Recorded date 16 Apr 1987). [Maintenance Department Files.]

1988
Kitchen cabinets installed. Possibly vinyl flooring installed. [Maintenance Department Files.]

1991
April 1, Installed Carpet
Wood Stove from HS-08
November 27, Installed Pellet stove. [Maintenance Department Files.]

1993
October 1, 1993. Structure Ultimate Treatment (UT): Restoration. Not approved, not completed [List of Classified Structures.]

1995
Stone patio repairs. [Maintenance Department Files.]

1999
June 21, Installed radon fan. [Maintenance Department Files.]

2001
Fall, Water leak floods the house, necessitating removal of carpeting, kitchen cabinets and vinyl flooring.

2002
Radon and Hazmat testing. [Maintenance Department Files.]
Re-roofed house with Tamko Heritage 40 shingles. McCarthy Anderson contractor. Contract Number C1505010058. [Maintenance Department Files.]

2003
Repair Water Damage in Historic Quarters HS-06, PMIS 87570, Park Project # WICA-03-03. Due to the water leak in 2001, the house was renovated. [Memorandum from Superintendent to Chief of Cultural Resources, MWR, May 15, 2003. Repair Water Damage in Historic Quarters HS-06. Maintenance Department Files.]

2004
Stabilize Foundation, PMIS 77470, Park Project # WICA-04-12. Stabilize foundation under a portion of the building and the stone terrace. Stone steps dismantled and rebuilt

Historic Photos

Figure 4. HS-06, 1934, Aug. 31, looking north. (WICA 4728)

Figure 5. HS-06, 1934, Nov. 6, looking west. (WICA 4269)

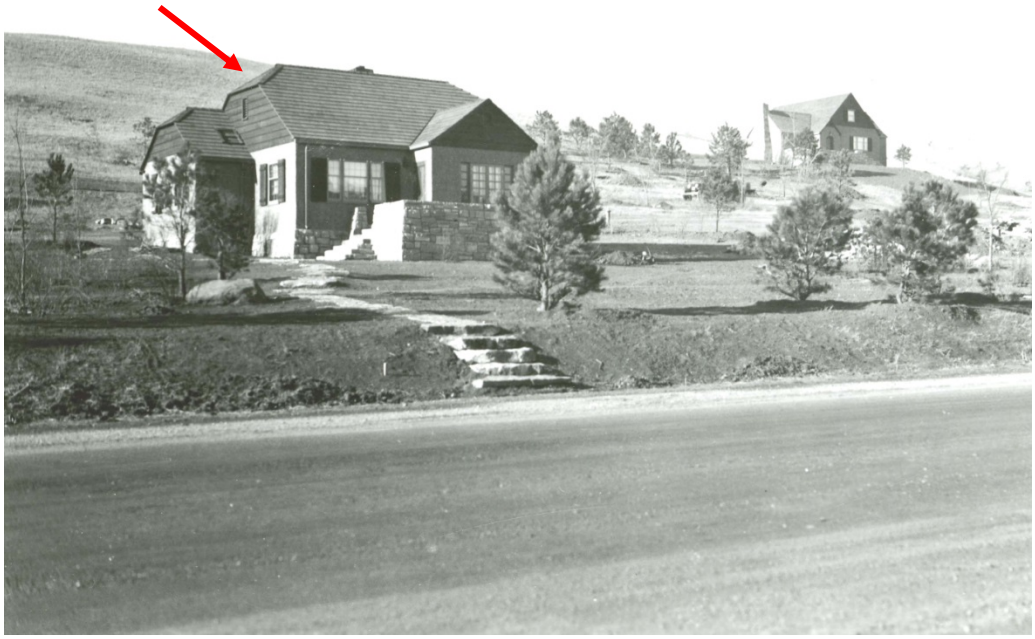


Figure 6. HS-06, ca. 1934, looking west. (WICA 4137)

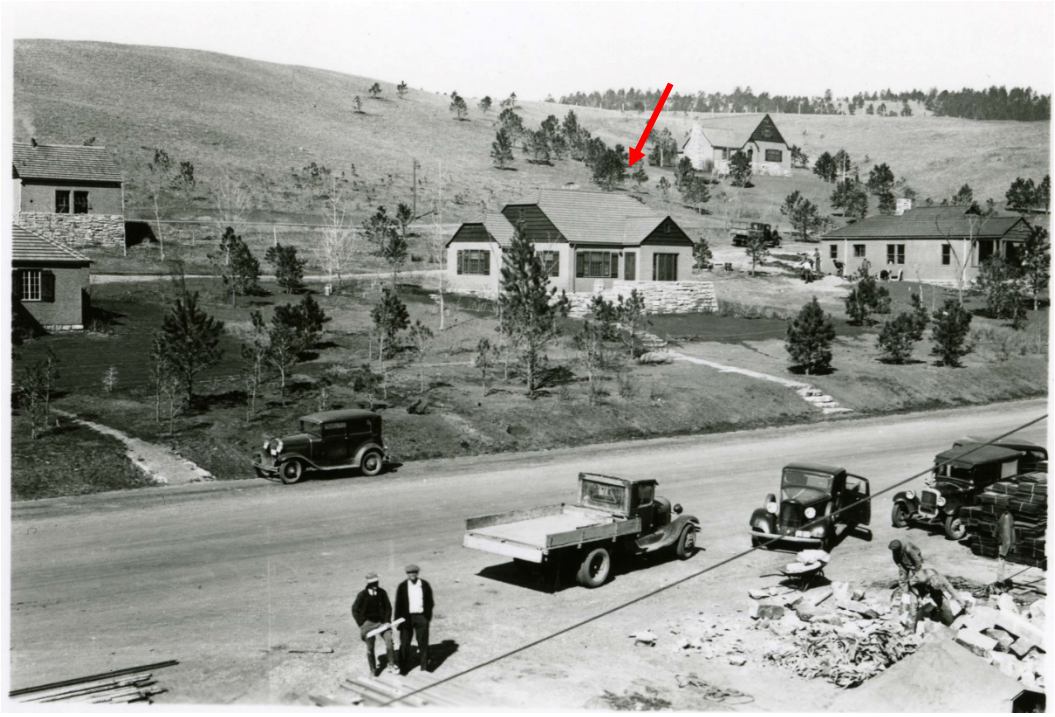


Figure 7. HS-06, ca. 1936, looking northwest. (WICA 6725)

Figure 8. HS-06, ca. 1937, looking west. This photo was included in "Development of National Park Areas in the Black Hills by the CCC," The Black Hills Engineer, Dec. 1937, by Edward D. Freeland. (WICA 4275)

Figure 9. HS-06, ca. 1950s looking east. This was just before the back porch addition created an enclosed entrance to the basement. (WICA 6364)

Figure 10. HS-06, ca. 1959, Nov 1, looking west. (WICA 6356)

Figure 11. HS-06, ca. 1970, looking northwest. (WICA 8095)

Figure 12. HS-06, ca. 1970, looking west. (WICA 8096)

HS-06 North Louver Detail. (SRJA 2014)

Existing Conditions

HS-06 Quarters Existing Conditions

HS-06 Quarters was constructed in 1934 and is the middle of the three houses that are closest to the Visitor's Center. This is a single story house with a partial basement.

This house, like most buildings in the historic housing area, is oriented with the north face of the building facing more northeast. For consistency in this report, all buildings are referred to in the north/south/east/west cardinal directions. Therefore, the elevation facing northeast is referred to as the north elevation, and the elevation facing southeast is referred to as the east elevation and so forth.

A major structural reinforcing project was conducted in 2004 which stabilized the southeast corner of the house and the stone terrace walls through underpinning with the installation of new concrete foundations and helical piers.

Exterior

The one-story wood frame house is clad with Spanish stucco and has a partially exposed native rubble stone foundation. The grade slopes slightly up towards the west side of the building, exposing none of the stone foundation at the west side of the building.

Roof

The original wood shingle roof was replaced with asphalt shingles for the first time in 1982. The existing asphalt shingle roof dates to 2002 and appears to be in good overall condition. The roof is a Heritage 40 Laminated asphalt shingle, manufactured by Tamko Roofing in the Rustic Cedar color.[8] The K-style aluminum gutters and downspouts were also installed at that time. Aside from the stone chimney, three roof penetrations include the flue for the pellet stove on the north-facing roof, a vent for the kitchen sink and a vent for the bathroom – both on the west-facing roof. At the time of the survey, the gutters were full of pine needles. The pine needles also tend to accumulate on the lower-sloped flat roof on the west portion of the building. Also, there is no cricket visible behind the stone chimney. The original 1933 construction documents called for a 'saddle' to be installed behind the chimney to shed water. This should be confirmed, as it is not visible from grade.

The original 1933 construction documents call for 24-inch shingles with a 7 ½-inch exposure. The north addition was constructed in 1956. This addition originally has a flat built-up roof installed (Figure R2). The roof was re-framed at an unknown time, to increase the slope and tie-in with the main roof and is now shingles.

[8] Maintenance Files, Letter from McCarthy Anderson to Steve Schrempp, January 16, 2002.

Figure R1. West-facing roof. (SRJA 2014)

Figure R2. Photograph of a copy of a photograph from 1956 following the construction of the addition. Note the roof is flat and is not attached to the upper roof. (Maintenance Department Files, 1956)

Windows and Shutters

The 1933 construction drawings clearly indicate the original windows were wood double-hung with divided lites. During several previous renovations, all of the original wood sashes were removed from the building and were replaced with interior aluminum single pane sashes (Figure W1), or very similar to a storm window. These interior replacement windows are not historically appropriate, nor are they energy efficient. They are a cream-colored finish, which does not match the interior dark stained trim. These are primarily installed in the public spaces in the house (Living Room, Kitchen and Mud Room, Windows 104, 105, 106, 107 and 108). The 1933 exterior wood trim window surrounds are in various state of deterioration. Metal storm windows are installed on these exterior openings (Figure W1). The metal storm windows are showing signs of deterioration and age and are ready for replacement.

When completed in 1934, the wood windows were protected on the exterior with top-hung storm window sash. These were changed out with screened sash during the summer months.

The bedroom windows were replaced at an unknown date (Windows 100, 101, 102 and 103). The original wood double-hung windows did not meet the required current life safety fire egress dimension. Therefore, all bedroom windows were replaced with a reproduction Pella aluminum wood clad casement window with a simulated meeting rail in a 1/1 configuration. The original wood trim and sills on the exterior were panned with pre-finished aluminum. This panning is wider in overall dimension than the original wood window trim, therefore changing the appearance of the windows (Figure W2). Also, the sills are panned increasing the overall height of the sill (Figures W2). The panning details have open joints and are not historically appropriate for the building. The panning leaves open joints that are completely dependent upon the condition of the sealant. The panning is providing protection for the historic wood trim and sills. The wood interior of the windows was never finished (Figures W3 – W6).

The replacement windows are 1/1 configuration. This is in stark contrast to the historic divided multi-lite windows. The exterior of the house lost some of its historic character when the windows were transitioned from divided multiple-lite windows to 1/1 windows. Another significant missing feature includes the exterior shutters.

Rustic board and batten shutters were installed on this house when it was first constructed (Figure W7). These shutters were also indicated on the original construction documents and were installed on the windows on the south, east and north elevations. They were not installed on the west (rear) elevation. Figure 10 in the Introduction is a photograph taken in 1959 which is the last known photograph showing the shutters installed. The next photograph, Figure 11, taken in 1970, shows that the shutters had been removed by that date. These were an important character defining feature of the exterior that lent the ‘rustic’ style to the building.

Figure W1. Typical metal replacement sash detail. Window 108.

Figure W2. Typical aluminum clad wood replacement window detail. Window 102.

Figure W3. Typical aluminum clad wood replacement window detail. Window 102 interior. (SRJA 2015)

Figure W4. Typical aluminum clad wood replacement window detail. Window 102 interior. (SRJA 2015)

Figure W5. Typical aluminum clad wood replacement window detail. Window 100 interior. (SRJA 2015)

Figure W6. Typical aluminum clad wood replacement window detail. Window 102 interior with missing finish and trim and sash not stained. (SRJA 2015)

Figure W7. Detail of front divided lite windows with shutters and wall light. Note that it appears that the screened sashes are installed on the windows in this photograph. (WCNP Archive Number: WICA 4275)

Stone Masonry

The native stone foundation is laid in a random ashlar pattern. The original foundations of the house were purely stone with no concrete walls. The foundations were specified to be buried below grade a minimum of eighteen-inches which is not to current frost depth design. The actual depth of the foundations has not been confirmed. The stone is in good condition throughout.

The original Portland cement-based mortar is intact in several locations. The foundation has had several campaigns of mortar repointing. Some of the more recent mortar does not match the historic mortar as closely as it could. The existing mortar is dirty and would need to be cleaned prior to assessing a new mortar match. Only a handful of stones are fractured and require replacement or monitoring.

Stucco and Paint

The exterior Spanish stucco is in relatively good condition on the east and south elevations, with only minor crack repairs on both elevations, which is typical considering the age of the structure. However, the stucco is in poor condition on the west and north elevations. The stucco is exhibiting excessive cracking and crazing on these elevations. The cause of this deterioration needs to be further investigated. It may be due to moisture in contact with the stucco where grade is raised and is in contact with the walls. Some of this deterioration may be due to foundation settlement or the stucco has simply met its lifespan in some locations and requires replacement.

The original stucco had an integral color in the top coat that was much more of a warm ochre color. The earlier stucco color can also be seen below peeling paint in certain locations. The date the stucco was first painted the current yellow color is unknown. The existing paint is latex and is de-bonding from the stucco in certain locations where the stucco is showing signs of water infiltration. The house was likely painted to cover previous plaster crack repairs.

Note two colors of brown paint are used to cover the trim on the exterior of the house. The trim color is a more orange-brown paint and the horizontal wood siding is a dark brown stain (Figure F-1).

Figure F-1. Detail at cornice showing the color of the trim paint against the wood siding stain color. (SRJA 2014)

Figure X1. East Elevation. (SRJA 2014)

East Elevation

The east elevation faces the Visitor's Center and is the primary façade of the house (Figure X1). The one story house rests on an exposed native stone foundation laid in a random ashlar pattern. The first floor walls are clad with Spanish stucco. The front battered stone terrace is a defining feature of the house.

The battered stone terrace walls are in good overall condition requiring cleaning and minor crack repair and spot repointing (Figures X2 – X8). There are areas where repointing mortar does not match the original historic mortar (Figure X5). The drainage holes through the wall require continuous maintenance to keep them clear from pine needles. The back side of one of the drainage holes has a bent sheet metal liner that needs to be bent back into place and mortar touch-up around it (Figure X8). The walls show typical signs of aging, including a few stones that are in differing stages of fracturing their facing (Figure X4). This is unavoidable and no treatment will arrest this condition. Once a stone has fractured and is allowing water to infiltrate the wall, the stone must be replaced to prevent water penetration deeper into the system.

The stone terrace steps require cleaning and spot repointing. There is no handrail on the stairs, and there is no guardrail at the terrace porch, as required by code. The stone landing at the bottom of the steps has settled several inches, resulting in a nearly ten-inch rise at the first step, which needs to be corrected (Figure X2).

The stone terrace porch floor is in good overall condition. A crack in the mortar joints in the porch floor extends from the outside corner of the house near the front door several feet towards the steps. The joint between the stone terrace and the stucco wall is open and requires a sealant installation at the perimeter of the house. Many, or perhaps all, of these stones in the terrace floor may have been replaced during the underpinning project in 2004. A survey sheet found in the Maintenance Department File dated August 1995 shows many of the stones were cracked or damaged with the top layers spalling.[9]

The exposed stone foundation on the east elevation is in good overall condition, requiring cleaning, spot repointing and mortar wash repair at the top of the foundation wall.

The stucco wall cladding is in good overall condition with only very minor cracks that require repairs.

Figure X2. East Terrace looking north. (SRJA 2014)

[9] Maintenance Department Files, Sketch from August 8, 1995.

Figure X3. East Terrace looking west. (SRJA 2014)

Figure X4. East Terrace stone deterioration detail. (SRJA 2014)

Figure X5. East Terrace looking south. Note the two colors of mortar. (SRJA 2014)

Figure X6. East Terrace porch looking south.
The red line indicates a crack in the mortar joints. (SRJA 2015)

Figure X7. East Terrace porch looking north. (SRJA 2014)

Figure X8. East Terrace porch at back side of drainage hole.
Note the bent sheet metal lining at the opening. (SRJA 2014)

Door 100/3 is an original pair of French doors flanked with divided sidelights. The doors and sidelights are protected with wood storm doors and sashes, which are in deteriorated condition and require repair or replacement (Figures X9 and X10). The entire door and frame require prepping, priming and painting.

The entry Door 100/1 is an original wood V-joint tongue and groove door with two glass lites, spaced diagonally across the door (Figures X11 and X12). The hardware is original Yale and has the original finish. The door is in very good overall condition, having been protected by the storm door. The storm door is a painted steel door that is oxidized and in disrepair with a broken screen. The door frame and sill require repair and painting.

Window 100 is a three-part window with mulled aluminum wood clad casement windows and exterior metal panning covering the historic wood trim (Figure X13). Historically, the windows were wood double-hung. The center window was an 8/12 and the flanking windows were 4/6. They were covered with wood storm windows in the cool months and screened sash in the summer. The windows were flanked on either side with a pair of rustic board and batten shutters.

Figure X9. East Terrace Doors 100/3. (SRJA 2014)

Figure X10. East Terrace Doors 100/3 storm door and sash deterioration details. (SRJA 2014)

Figure X11. Front Door 100/1 storm door. (SRJA 2014)

Figure X12. Front Door 100/1. (SRJA 2014)

Figure X13. Window 100 Detail. (SRJA 2014)

The wood trim and horizontal wood siding in the east-facing gable appear to be in good overall condition, requiring only touch-up painting (Figure X13). It was not apparent if the wood louver in the gable contains a screen. This should be verified to be in place.

The front porch wall light near the front door appears to be original (Figure X16). A light fixture of this unique shape appears in early photographs. There is no glass installed on the fixture. A close look at a 1937 photograph indicates the glass may have been missing at that time, as well (Figure W4). There do not appear to be any tabs on the interior of the fixture that would hold glass, so it may never have had glass. This light is a unique feature that should be preserved.

The downspout set back from the face along the south elevation has become detached from the foundation wall and needs to be refastened and fixed into the existing downspout boot. The downspout boot is white PVC and was likely installed during the foundation stabilization project. This drain daylights to the east of the building. The white color of the pipe is a stark contrast to the surrounding grade and building.

Figure X14. East gable detail. (SRJA 2014)

Figure X15. East wall and downspout detail at south side of building. (SRJA 2014)

Figure X16. Front entry light detail. See also
Figure H-57 in Volume I for historic photograph of this fixture. (SRJA 2014)

Figure X17. South Elevation. (SRJA 2014)

South Elevation

The South Elevation contains the primary entrance steps to the front terrace. The stone foundation of the house is exposed at the east side of the elevation and grade rises towards the back (west side) of the house. The stuccoed elevation projects forward and contains two gables with hipped roofs and horizontal wood siding. An addition at the west side has a shallow sloped roof.

The exposed stone foundation on the south elevation is in good overall condition, requiring cleaning, spot repointing and mortar wash repair at the top of the foundation wall (Figures X18 and X20). The stone foundation near the southeast corner of the house shows signs of settling. A through-wall crack extends from grade, up through the mortar joints and diagonally across the corner of the stucco wall (Figure X18). This corner was previously stabilized by underpinning with piers. This is further discussed in the Structural Section of this report.

The east foundation vent is covered with a large board and batten access panel (Figure X19). The paint is peeling and requires restoration. This opening was drawn as a small foundation vent on the construction drawings, but it was constructed as a crawl space access. A 1934 photograph (Figure 4) shows this opening was infilled with a lattice frame and painted a light color. The current access panel was in place by 1959 (Figure 10) and is secured with metal thumb turns. The smaller wood foundation vent centered under Window 102 (Figure X21) is in deteriorated condition and must be replaced and requires new thumb turns.

The stucco wall cladding is in good overall condition. There are only very minor cracks that require repair (Figure X20).

The electrical service and meter is attached to this side of the house, adjacent to Window 102. A telephone box is mounted on the wall near the southwest corner of the house.

The wood trim and horizontal wood siding in the south-facing gables appear to be in good overall condition, requiring only touch-up painting. It was not apparent if the wood louver in the upper gable contains a screen. This should be verified to be in place and in good condition.

A wood bird house is installed in the lower gable. This bird house was installed by staff and is finished to match the surrounding wood siding. These bird houses are installed to prevent wood peckers who have chosen to live in this particular spot from pecking holes through the wood siding. These houses have a sheet metal backing which prevents further damage to the building. These birds are habitual and will take up residence in these houses year after year, so the bird house will remain as long as it is needed. This is a removable feature that does not detract from the overall character of the house.

Window 101 is an aluminum wood clad casement window with exterior metal panning covering the historic wood trim (Figure X22). Window 102 is a three-part window with mulled aluminum wood clad casement windows and exterior metal panning covering the historic wood trim (Figure W2). Historically, the windows were wood double-hung. The center window at Window 102 was an 8/12 and the flanking windows were 4/6. They were covered with wood storm windows in the cool months and screened sash in the summer. The windows were flanked on either side with a pair of rustic board and batten shutters.

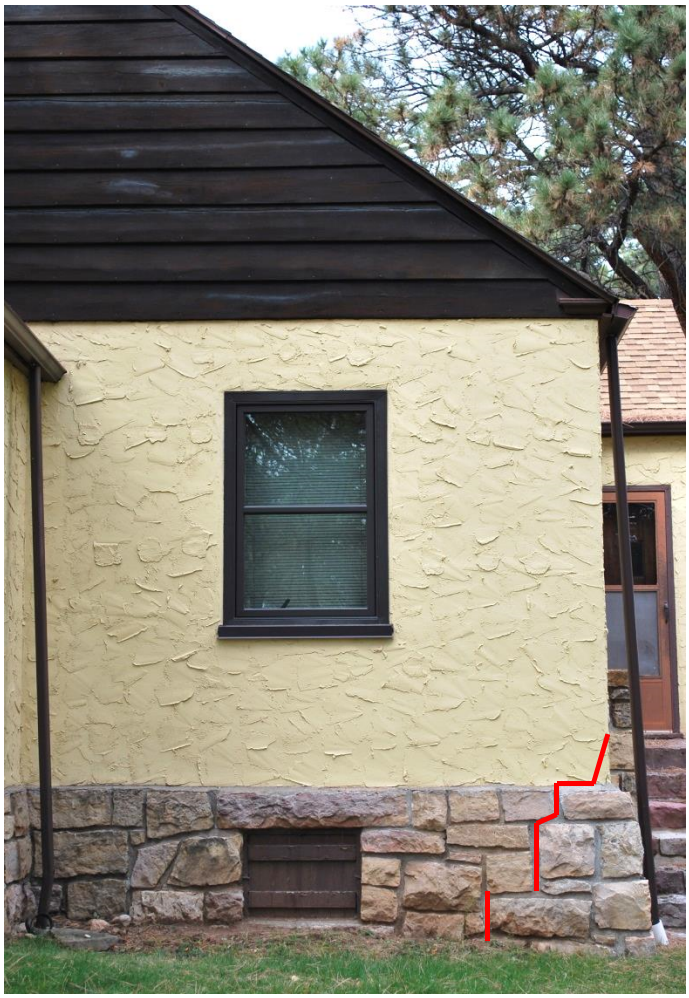


Figure X18. South Elevation – east side with foundation crack indicated in red. (SRJA 2014)

Figure X19. Foundation vent cover detail. (SRJA 2014)

Figure X20. Stone foundation detail. Note the small crack at the corner. (SRJA 2014)

Figure X21. Foundation vent cover. (SRJA 2014)

Figure X22. South Elevation Window 101 detail. (SRJA 2014)

Figure X23. West Elevation. (SRJA 2014)

West Elevation

The west elevation of the house faces the upper road to the west. The road is several feet above the finished floor of the house. The house and road are separated by a steep grade and in-grade concrete steps (Figure X24). The concrete steps appear to be in good condition. Clay tiles are lined along the perimeter of the stair and retaining grade along the west side of the stone patio. The clay tile is in poor condition. A concrete slab spans the area between the steps and the house (Figures X25 – X28). A mortared stone patio stretches to the north and south of the concrete landing. Both the concrete landing and the stone patio are set directly against the stucco on the side of the house with no soft joint separating the materials.

The west wall of the house is clad in stucco. The stucco has some crazing and vertical cracks projects from the base towards the top of the wall. This may be due to moisture in the stucco or from expansion and contraction of the concrete/stone slab against the stucco wall or from settlement of the concrete foundation in this area. The stucco in the southwest corner has flaking paint, evidence of moisture in the wall. The grade in this area is well above the stone foundation wall (Figures X28 and X30). The wood trim and horizontal wood siding in the south- and north-facing gables appear to be in good overall condition, requiring only touch-up painting.

Window 103 is an aluminum wood clad casement window with exterior metal panning covering the historic wood trim (Figure X30). Originally, this was a wood 8/12 double-hung window.

Window 104 is an original wood double-hung window location, but the wood sash have been removed and replaced with an interior metal window and an exterior metal storm window (Figure X26). The storm window did not appear to have drainage holes in the bottom to allow condensation to exit the frame. Door 106/1 is the back door of the house and is protected by an aluminum storm door (Figure X26). The storm door is in good overall condition with the exposed wood frame requiring painting. The threshold is poured concrete and has several cracks. The historic wall light fixture adjacent to the door is missing its glass jelly jar globe (Figure X35). The wood trim is in fair condition for both of these openings and requires painting.

Window 106 is an original wood 8/12 double-hung window location, but the wood sash have been removed and replaced with an interior metal window and an exterior metal storm window (Figures X33 and X34). The grade below Window 106 in the northwest corner is well above the top of the stone foundation wall and is in direct contact with the stucco wall. The stucco throughout this elevation is full of crazing and cracks and is in a state of deterioration.

The west addition with the low-sloped roof was added in 1956 to provide an interior access into the basement. Prior to this addition, a bulkhead and stair were entered from the exterior of the house (Figure 9). This addition has poured concrete walls. Along the south wall, a concrete projection at the foundation indicates that the south concrete wall of the addition was poured to align with the bulkhead door south wall. This was done to keep the basement door in the same location for the new stair, as it was for the bulkhead door. This small addition has deep overhanging eaves, which is very different than the earlier WICA historic housing designs. The wood soffits also have a curious construction – they flare up several inches towards the fascia at an angle (Figure X29). This is best seen above Window 103, which may indicate that they flared this soffit to miss the head of this existing window.

The stone chimney is most visible from this side of the house (Figure X36). The chimney contains two flues. The west flue is capped with sheet metal and the east flue appears to have a plumbing vent pipe projecting through the top. The stone chimney requires cleaning, spot repointing and mortar wash repair at the top. Significant rust staining runs down the face of the chimney. This requires further investigation to determine what metal item is causing the rust.

Figure X24. West in-grade concrete steps and concrete landing. (SRJA 2014)

Figure X25. West stone patio. (SRJA 2014)

Figure X26. Back Door 106/1. (SRJA 2014)

Figure X27. Back Door 106/1 concrete threshold detail at concrete landing. (SRJA 2014)

Figure X28. South Elevation – west section. Grade along the west wall is above the stone foundation wall. The red arrow points to the ledge in the concrete foundation that was placed in the location of the original bulkhead south wall. (SRJA 2014)

Figure X29. Roofline at west addition, looking north.
Note the soffit angling up away from the wall (SRJA 2014)

Figure X30. West Elevation – south portion. Window 103. Grade along the west wall is above the stone foundation wall. Note the flare of the eave above the window. (SRJA 2014)

Figure X31. Roofline at west addition, looking south at Window 105 (SRJA 2014)

Figure X32. West Elevation – north portion. Window 106. Due to the high grade below Window 106, the stucco wall is extensively crazed. (SRJA 2014)

Figure X33. West Elevation Window 106. (SRJA 2014)

Figure X34. West Elevation Window 106 detail. (SRJA 2014)

Figure X35. West Elevation wall light detail with the missing jelly jar globe. (SRJA 2014)

Figure X36. West Elevation chimney detail. The west flue is capped, the east flue has a white PVC vent. (SRJA 2015)

Figure X37. North Elevation. (SRJA 2014)

North Elevation

The North Elevation is a single story and set into grade (Figure X37). The stone foundation of the house is exposed at the east side of the elevation and grade rises towards the back (west side) of the house. The stuccoed elevation projects forward and contains a large gable with a hipped roof and horizontal wood siding. An addition at the west side has a shallow sloped roof.

The grade at the northwest corner of the house is well above the top of the stone foundation and is in direct contact with the stucco walls. This is evident below Window 105 (Figures X38 and X39). The stucco walls in this corner are in a state of deterioration, showing signs of cracking and crazing, likely due to water infiltration into the wall.

The exposed stone foundation on the north elevation is in good overall condition, requiring cleaning, spot repointing and mortar wash repair at the top of the foundation wall (Figures X40 and X41). There are several campaigns of mortar repointing on this elevation, of varying colors and textures.

The foundation vent is centered under Window 108 and is covered with a painted board (Figure X40). The board requires repainting. The dryer vent from the basement dryer and the radon mitigation vent discharge through this foundation opening. The use of the foundation vent for the dryer is compatible, but the projecting radon vent pipe the entire vertical height of the north wall is a distraction.

Cracking and crazing in the north stucco wall cladding is prevalent. Further destructive investigation may be required to determine the cause.

The wood trim and horizontal wood siding in the north-facing gable appear to be in good overall condition, requiring only touch-up painting. It was not apparent if the wood louver in the gable contains a screen. This should be verified to be in place and in good condition. A stainless metal flue projects through the hipped roof in the center of the gable. This once served a pellet stove in the living room that is no longer used.

All three windows facing the north elevation, Window 105, 107 and 108 are original wood double-hung window openings. The sash have been removed and replaced with a metal interior sash and exterior metal storm window. The original configuration of Window 105 is unknown, but Window 107 was a 4/8 and Window 108 was a three part mulled window with the center 8/12, flanked with 4/6 windows. Windows were covered with wood storm windows in the cool months and screened sash in the summer. Windows 107 and 108 were flanked on either side with a pair of rustic board and batten shutters.

Both downspouts require new extensions be installed. The west downspout is disconnected from its extension and the east downspout requires an extension to reach the boot. The boot is a white in-grade PVC pipe.

Figure X38. Northwest corner of the house. Grade is well above the top of the stone foundation wall and is damaging the stucco walls. Window 106 is in the facing north wall in the photograph. (SRJA 2014)

Figure X39. North Elevation grade above top of stone foundation near the northwest corner. Note the downspout leader has been disconnected. (SRJA 2014)

Figure X40. North Elevation infilled foundation vent with dryer vent and radon vent pipe. (SRJA 2014)

Figure X41. North Elevation downspout detail missing extension to boot. (SRJA 2014)

Figure X42. North Elevation gable detail. (SRJA 2014)

Figure X43. North Elevation Kitchen Window 107 detail. (SRJA 2014)

Existing Conditions – Interior

Basement

The 350 square foot basement is comprised of the stairs, one large Room 001, one small Room 002 and a Crawl Space 003.

The stairs to the basement are located along the west exterior wall of the house. The poured concrete stair was installed when the addition was constructed in 1957. The concrete stair is in good condition. Prior to the addition, the basement was accessed by a bulkhead door (Figure 9). Door 001/1 is installed at the bottom of the stair. This door and frame may date to the bulkhead access, as the door and the hardware are early in comparison with the surrounding 1957 construction.

Room 001 (Figures B-3 – B-8) is the largest of the two rooms and is approximately 19'-10" by 14'-0." Head height clearance is 6'-8" to the underside of the floor joists. The concrete slab floor is in good condition, showing previous signs of repairs and renovations. A small section of the floor near the center of the north wall is slightly depressed (Figure B-7). A floor leveler has been installed which was not well adhered to the concrete subfloor and it has begun to crack and break away. A floor drain is installed in the center of the floor. A wood post has been partially encased in the stone retaining wall along the north wall. This is discussed further in the Structural Section of this report.

The original stone foundations align with the perimeter of the house. Around 1937, a basement was excavated within the confines of the foundation to yield this existing configuration. The access for this area was the bulkhead on the west wall. New interior stone retaining walls were constructed throughout the basement and have a concrete soil cap. The original stone foundation walls are not currently visible, as wood frame walls have been installed at the perimeter of the room and therefore, mask these walls.

Washer and dryer hookups are located along the north wall. A wall mounted electric heater is installed on the north board wall. The electrical panels are installed on the north wall, as well. A water heater is installed in the northwest corner of the room. Plumbing and electrical is exposed in the floor joists above.

Room 002 is the small room located to the south of the larger space (Figures B9 – B10). This room is separated from Room 001 by a wood stud wall clad on the north side with wood boards. The room is only 4'-2" by 10'-8." Stone retaining walls with concrete caps line the north, south and east sides of the room. As in Room 001, the original stone foundation walls are obscured by the wood stud wall with plywood coverings. A small opening in the west stone foundation indicates there may have been an early foundation vent or coal chute into this space.

Crawl Space 003 is accessed from a small wood removable panel in the north wall of Room 001 (Figure B-4). The crawl space (Figures B-11 – B-16) is shallow with a dirt floor. Small

swales have been excavated near the north and west walls that connect into an 'L' shape for access into this area. These excavations seem to be stable, but the west swale is very close to the west foundation wall and should be monitored for undermining the foundation. Both the north and west walls have extensive stucco cracking, but the stone foundations in these areas appear to be stable from the exterior of the building.

Several stone piers that are original to the 1934 structure remain and support long wood girders (Figure B-14). A brick chimney resting on a stone foundation is constructed in the west portion of the crawl space. The chimney is also original. The exterior stone foundation walls in the crawl space were not able to be observed due to the installation of fiberglass insulation.

PVC piping with holes can be found throughout the crawlspace. The piping is covered with a vapor barrier (Figures B-11 – B-13). A radon mitigation fan is attached to the piped system to carry radon gases to the exterior of the building. The crawl space appeared to be dry at the time of the January 2015 visit. Evidence of the original hydronic radiant heating system can be found throughout this crawlspace where old pipes are still installed.

Figure B-1. Basement stair looking west through Door 001/1. (SRJA 2014)

Figure B-2. Door 001/1 from the basement stair looking east. Note the curved structure in the top right corner signifies the offset of the frame wall above the concrete foundation wall. The wall on the right was poured to align with the previous bulkhead door wall, so that the door could be used with the new stair. In order to retain the existing Window 103 at the first floor west wall above, the frame wall had to be offset to the north to miss the window frame. (SRJA 2014)

Figure B-3. Basement 001 Looking north. (SRJA 2014)

Figure B-4. Basement 001 Looking north. (SRJA 2014)
The blue arrow points to the Crawl Space 003 access panel. (SRJA 2014)

Figure B-5. Basement 001 Looking east. (SRJA 2014)

Figure B-6. Basement 001 Looking west. (SRJA 2014)

Figure B-7. Basement 001 Floor detail. (SRJA 2014)

Figure B-8. Basement 001 Looking south at Door 001/2. (SRJA 2014)

Figure B-9. Basement 002 Looking west. (SRJA 2014)

Figure B-10. Basement 002 Looking east. (SRJA 2014)

Figure B-11. Crawl Space 003 Looking east. (SRJA 2014)

Figure B-12. Crawl Space 003 Looking northwest. (SRJA 2014)

Figure B-13. Crawl Space 003 Looking west. (SRJA 2014)

Figure B-14. Crawl Space 003 Looking west at stone pier. (SRJA 2014)

Figure B-15. Crawl Space 003 Looking west at chimney. (SRJA 2014)

Figure B-16. Crawl Space 003 Looking west. Note the excavation is very close to the outer stone foundation wall. (SRJA 2014)

First Floor

The first floor is approximately 1,103 gross square feet and has seven total rooms plus closets. The first floor is in nearly original 1934 condition with no major alterations. Remodeling of the house has focused on finishes and renovations of the bathroom and kitchen.

Due to freezing pipes, a water leak in the kitchen occurred in the fall of 2001 which flooded the building.[10] This necessitated a complete removal of all kitchen cabinets and vinyl flooring material, as well as carpet throughout the house. The overall project, conducted about 2003, included upgrades and rehabilitation work throughout the house, as well. Major work included: new piping; new water heater and water meter; reconfiguring the bathroom to existing layout, including the reversing of the door hinges; restoration of all plaster walls and ceilings throughout the house; painting; new carpet and pad in the bedrooms and closets; new laminate flooring in the kitchen, living room and bathroom; new kitchen cabinets and appliances; and new storm doors at Door 100/3.

Millwork

The interior millwork throughout the house is consistent with decorative profiling found in some of the other residences, including the door and window trim (Figure M-1). Doors do not have plinths. The baseboards are flat stock with no profile. All millwork is dark stained and appears to be pine. Only the bathroom, kitchen and closets have painted trim. A dark stained picture molding runs the perimeter of some of the rooms.

[10] Memorandum, May 15, 2013 from the Superintendent to the Chief of Cultural Resources, MWR. WICA Maintenance Files.

Figure M-1. Typical millwork profiles. (SRJA 2015)

Living Room 100

The Living Room 100 serves as the front entry and main living space for the house (Figures 1-1 – 1-10). The room is 18'-3" by 14'-10" with a ceiling height of 8'-2." The walls and ceiling are painted plaster. A stained picture molding approximately 12-inches below the ceiling and a stained baseboard line the perimeter of the room. Millwork installed on the doors and windows matches other millwork throughout the house. The floors are a wood laminate and are in good condition. A shoe molding was added when the flooring was installed. The original floors in the Living Room were specified to be oak.

When the house was originally constructed, a door to the kitchen was installed in the west wall, near where the pellet stove is now located. Outlines in the plaster and baseboard still indicate where this opening was. A large diagonal crack travels across this wall. A window seat was once installed under the north window according to the 1933 construction documents. Vertical wood paneling was installed at some point on the west and south walls. This paneling was removed during the 2003 renovation and the plaster walls and ceilings were repaired and painted.

The front Door 100/1 is the original V-joint tongue and groove door and has the original hardware (Figures 1-5 and 1-6). The French Door 100/3 and sidelights are also original wood divided lite doors and sash. These are in deteriorated condition, as observed by previous non-compatible patch repairs (Figures 1-7 – 1-9). These doors, sidelights and hardware require a full restoration. The double swinging door in Cased Opening 100/2 in the west wall has been removed.

Window 108 in the north wall is an original three-part mulled window. The wood double-hung sash were removed and replaced with three metal replacement sash that are not historically appropriate or energy efficient. They have a white metal finish that does not match the historic stained trim.

A pellet stove was installed in 1989 and is located in the northwest corner of the room. In Maintenance File photographs before the 2003 renovation, this stove was set on a stone base and had stone heat protection at the west and north walls. This stone was all removed during the 2003 renovation. This stove is no longer used.

Baseboard heaters are installed along the east and south walls near the windows. Four historic wall sconces remain – two each on the north and south walls (Figure 1-10). The room is lit by a ceiling fan in the center of the room.

Figure 1-1. Living Room 100 Looking north. (SRJA 2014)

Figure 1-2. Living Room 100 Looking east. (SRJA 2014)

Figure 1-3. Living Room 100 Looking south. (SRJA 2014)

Figure 1-4. Living Room 100 Looking west. It is not visible in this photograph, but there is significant diagonal cracking near the center of this wall.
The double swinging door from Cased Opening 100/2 is missing. (SRJA 2014)

Figure 1-5. Living Room 100 Looking at Door 100/1. (SRJA 2014)

Figure 1-6. Living Room 100 Detail Door 100/1 hardware. (SRJA 2014)

Figure 1-7. Living Room 100 Door 100/3. (SRJA 2014)

Figure 1-8. Living Room 100 Detail Door 100/3. (SRJA 2014)

Figure 1-9. Living Room 100 Detail Door 100/3 hardware. (SRJA 2014)

Figure 1-10. Living Room detail historic wall sconce. (SRJA 2014)

Bedroom 101

Bedroom 101 is located in the southeast corner of the first floor (Figures 1-11 – 1-17). The room is approximately 11’-0” by 13’-0” with a ceiling height of 8’-3” and has a small closet along the west wall. The walls and ceiling are painted plaster. The plaster ceiling contains several large cracks. A stained picture molding approximately twelve inches below the ceiling and a stained baseboard line the perimeter of the room. Millwork installed on the doors and windows matches other millwork throughout the house. The floors carpeted over an unknown wood substrate. The original documents specify fir flooring in the back-of-house areas.

The entry Door 101/1 and Closet Door 101/2 are both original single panel stained pine doors with the original hardware (Figures 1-13, 1-14 and 1-16).

Both Window 100 in the east wall and Window 101 in the south wall are original window openings with replacement aluminum clad wood casement egress windows installed. The window installation was not finished on the interior, leaving unstained wood and lacking finish trim (Figures 1-15, W5 and W6). The apron under the stool of Window 100 is installed upside down (Figure 1-15).

A baseboard heater is installed along the east wall under the window. The room is lit by a ceiling fan in the center of the room. A smoke detector is installed on the ceiling near the bedroom door.

Closet 101A has a rod and shelving (Figure 1-17). Millwork is painted white. A pull chain porcelain wall light fixture is installed on the east wall.

Figure 1-11. Bedroom 101 Looking east. (SRJA 2014)

Figure 1-12. Bedroom 101 Looking south. (SRJA 2014)

Figure 1-13. Bedroom 101 Looking west. (SRJA 2014)

Figure 1-14. Bedroom 101 Looking west. (SRJA 2014)

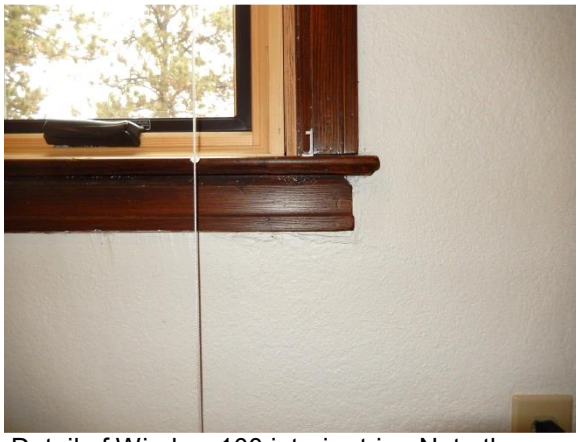


Figure 1-15. Bedroom 101 – Detail of Window 100 interior trim. Note the apron under the stool is installed upside down. (SRJA 2014)

Figure 1-16. Bedroom 101 Closet Door 101/2 hardware detail. (SRJA 2014)

Figure 1-17. Bedroom 101 Closet. (SRJA 2014)

Bedroom 102

Bedroom 102 is located in the southwest corner of the first floor (Figures 1-18 – 1-24). The room is 13'-8" by 12'-2" with a ceiling height of 8'-3" and has a small closet in the southwest corner of the room. The ceiling slopes slightly along the west side of the room and in the closet to match the roof lines. The walls and ceiling are painted plaster. The plaster ceiling and north and west walls contain many large cracks.

A painted picture molding approximately twelve inches below the ceiling and a painted baseboard line the perimeter of the room. Millwork installed on the doors and windows matches other millwork throughout the house and is painted. The floor is carpeted over an unknown wood substrate. The original documents specify fir flooring in the back-of-house areas.

The entry Door 101/1 and Closet Door 101/2 are both original single panel stained pine doors with the original hardware.

Both Window 102 in the south wall and Window 103 in the west wall are original windows openings with replacement aluminum clad wood casement egress windows installed. The replacement windows were primed on the interior but were never finished or caulked. The historic trim requires painting, as well (Figures W3 and W4).

A baseboard heater is installed along the south wall under the window. The room is lit by a flush mount light fixture in the center of the room. A smoke detector is installed on the ceiling near the bedroom door.

Closet 102A has a rod and shelving. The millwork is painted white. A pull chain porcelain wall light fixture is installed on the west wall.

Figure 1-18. Bedroom 102 Looking north. (SRJA 2014)

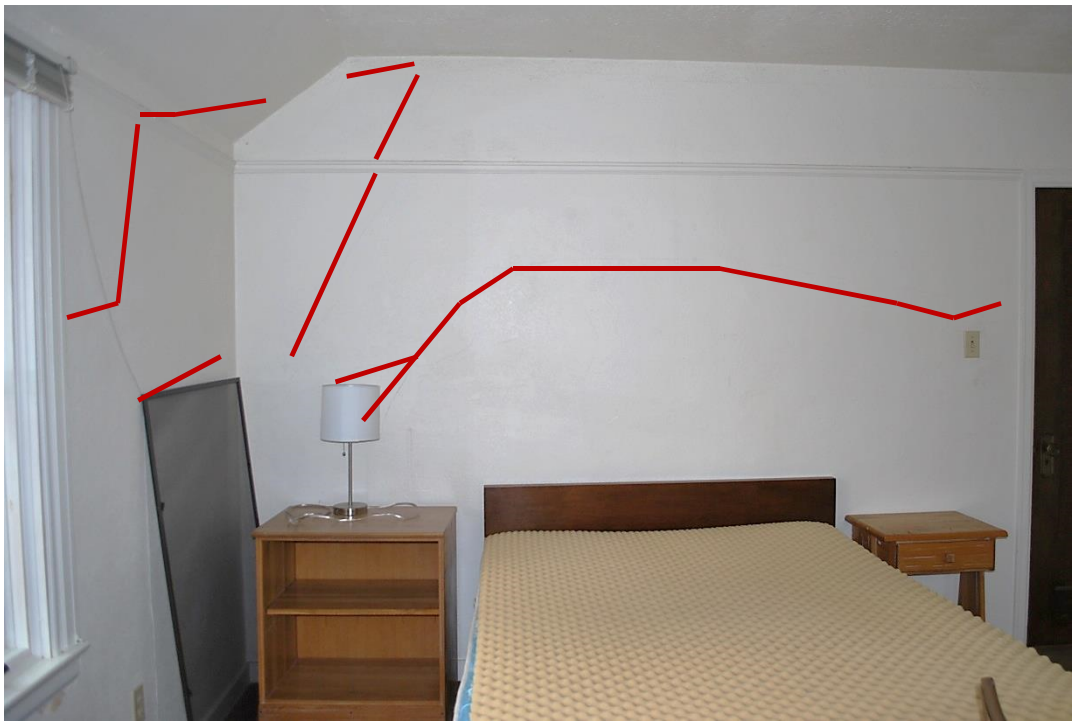


Figure 1-19. Bedroom 102 Prevalent cracking on west and north walls. (SRJA 2014)

Figure 1-20. Bedroom 102 Looking east. (SRJA 2014)

Figure 1-21. Bedroom 102 Looking south. (SRJA 2014)

Figure 1-22. Bedroom 102 Looking west. (SRJA 2014)

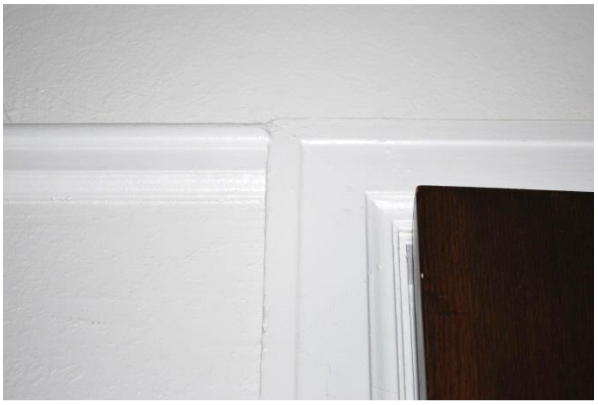


Figure 1-23. Bedroom 102 Typical trim detail at door and picture molding. (SRJA 2014)

Figure 1-24. Bedroom 102 Closet looking north. (SRJA 2014)

Hallway 103

Hallway 103 is the central hall serving the two bedrooms and bathroom (Figures 1-25 – 1-28). The room is approximately 3' x 11' with a ceiling height of 8'-3" and contains a small closet along the east wall. The walls and ceiling are painted plaster and appear to be in good condition.

A stained baseboard with shoe molding lines the perimeter of the room. Millwork installed on the doors and windows matches other millwork throughout the house and is all stained. The flooring is linoleum tile. The original documents specify fir flooring in the back-of-house areas, which is still seen inside the closet floor.

An original scuttle attic access opening in the ceiling is painted beaded board. The room is lit by a flush mount light fixture in the center of the room. A smoke detector is installed on the ceiling. The thermostat is installed on the west wall. A framed painted wood plumbing access is also installed in the west wall.

The closet has fixed painted shelving. The millwork is painted white.

Figure 1-25. Hall 103 Looking north. (SRJA 2014)

Figure 1-26. Hall 103 Looking south. (SRJA 2014)

Figure 1-27. Hall 103 Looking north at ceiling. (SRJA 2014)

Figure 1-28. Hall 103 Closet. (SRJA 2014)

Bathroom 104

Bathroom 104 is located in the west side of the first floor (Figures 1-29 – 1-34). The bathroom is approximately 8'-8" by 5'-7" with a ceiling height of 8'-3." The linoleum tile floor and all fixtures and finishes date to more recent renovations in 2003. The bathroom contains a tub/shower, toilet and vanity with sink. The renovation included reconfiguring the fixtures in the restroom and changing the swing of the door from a right-hand to a left-hand door. Scarring on the door shows the hardware was reversed.

Before the west addition was constructed in 1956, a 4/8 wood double-hung window was installed in the west wall and the bathroom fixture layout was different. This large window would have provided natural light and ventilation.

The bathroom Door 104/1is an original pine door with a large central obscured glass lite (Figure 1-32). This glass would have afforded natural light through the now-removed bathroom window into the center hall when the bedroom doors were closed. The door and all millwork on the interior of the bathroom are painted white. The hardware on the door is original to the construction. The hall side of the door is brass finish, while the hardware on the bathroom side of the door is chrome plated. The hinges are ball-tipped, half surface mounted. The simple chrome knob and rosette are chrome and are manufactured by Schlage. An original chrome and

glass towel bar is mounted near the top of the door. The chrome plating is rusting and requires restoration of all of the bathroom hardware. The screws for the hinges have been replaced with drywall Philips screws and should be replaced with standard chrome screws. This door is required by code to have tempered glass. This needs to be verified and corrected.

The room is lit by a can light over the shower and a wall light above the sink mirror. An exhaust fan is installed in the ceiling. A baseboard heater is installed on the north wall.

Figure 1-29. Bathroom 104 Looking west. (SRJA 2014)

Figure 1-30. Bathroom 104 North wall. (SRJA 2014)

Figure 1-31. Bathroom 104 Looking east. (SRJA 2014)

Figure 1-32. Bathroom Door 104/1 from the hall. (SRJA 2014)

Figure 1-33. Bathroom Door 104/1 with Schlage hardware. (SRJA 2015)

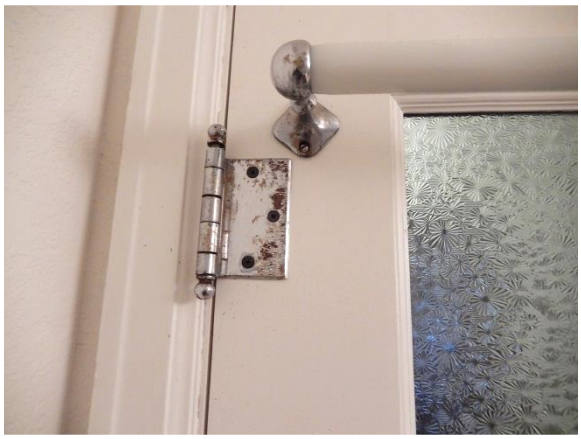


Figure 1-34. Bathroom Door 104/1 Obscured glass, hinge and towel bar details. (SRJA 2015)

Kitchen 105

Kitchen 105 is located in the northwest corner of the first floor (Figures 1-35 – 1-41). The room is divided into two spaces. The north portion of the room is approximately 12’ by 10’-7.” The south portion of the space is 8’-7” by 5’-4” with the plastered brick chimney in the northeast corner of the space. The ceiling height is 8’-1.”

The south part of the kitchen was originally considered the porch. A wall and door between the two spaces was removed in an earlier renovation. A heating unit was installed in this south porch space where the refrigerator is now located. This heating unit exhausted into the brick chimney. According to the mechanical plans, an expansion tank was located in the attic and the heat was dispersed through attic piping to radiators throughout the house.

The kitchen stove was located alongside and exhausted into the north side of the chimney. The Door 105/1 into the hall was originally a wall. The door from the Kitchen was originally located in the east wall and led directly into the Living Room. This wall area is now infilled and covered with kitchen cabinets.

The walls are plastered. A small painted wood cove molding is installed at the perimeter of both the north and south spaces. This trim is not historic and likely dates to the installation of the kitchen ceiling tiles. The ceiling is covered with a Celotex-type of twelve-inch-square tile. The date of the installation of the ceiling tile is unknown. Typically, these tiles are installed if the ceiling has a significant amount of plaster cracking or deterioration. These should be tested for potential asbestos prior to any future renovation.

All finishes, fixtures and cabinets date to recent renovations. The linoleum floor tiles are consistent throughout the Kitchen, Hall and Bathroom and were installed in 2003 after a severe water leak led to a major renovation of the house. Window 106 on the west wall and Window 107 on the north wall were both original wood double-hung windows. These window sash were removed and replaced with metal replacement sash that are not historically appropriate or energy efficient. The window installed over the sink is installed sideways as a bypass window and is not in keeping with the intention of the historic window.

Door 105/2 is the original back door before the west addition was installed. This door has a single glass lite and original door hardware. Several campaigns of hardware have been installed and uninstalled and the door is patched and requires restoration. The door is required to have tempered glass. This needs to be verified.

The early fuse box is located in the south wall near the back door. An unused Econotrol control is installed under the fuse box. A fire extinguisher is mounted to the wall.

Figure 1-35. Kitchen 105 Looking north. (SRJA 2014)

Figure 1-36. Kitchen 105 Looking east. (SRJA 2014)

Figure 1-37. Kitchen 105 Looking south. (SRJA 2014)

Figure 1-38. Kitchen 105 Looking east. (SRJA 2015)

Figure 1-39. Kitchen 105 Looking west. (SRJA 2014)

Figure 1-40. Kitchen 105 Looking west at Door 105/2. (SRJA 2014)

Figure 1-41. Kitchen 105 Ceiling detail looking northeast. (SRJA 2014)

Mud Room 106

The Mud Room 106 is the rear entry for the building (Figures 1-41 – 1-48). This is considered the west addition and was constructed in 1956. The room is approximately 6'-2" by 17'-5" with a ceiling height of only 7'-0." The finish floor is approximately three-inches below the adjacent kitchen floor. The stair to the basement is located in the south portion of this space. The foundation walls and floor slab in the addition are concrete and the floor slab is painted concrete. The paint is beginning to wear. The walls are frame and the addition has a low sloped roof. The addition was constructed in order to provide interior access to the basement.

The small utilitarian room has plastered walls and ceiling and exposed conduit for all of the lighting and switches. The east wall is the original Spanish stucco from the exterior of the house before the addition was constructed. Staining on the ceiling may be from previous water infiltration or humidity in this space.

A baseboard heater is installed under the north window and along the east wall near the stairs. The stairs have a wood handrail on the west wall. An old window is infilled on the west wall. This window once provided light into the Bathroom.

Window 104 is located over the stair. Window 105 is located in the north wall. Both are original 1956 wood double-hung window openings. The wood sash have been removed and replaced with metal interior sash and exterior storm windows.

Door 105/2 is discussed in the Kitchen Section. This frame is an original exterior wood frame and is the best preserved in the house since it has been protected from the elements. The original wood threshold is still installed and intact. Door 106/1 likely dates to the 1956 renovation. This door glazing is required to be tempered by code and needs to be verified. Folding doors are installed at the top of the stairs. This is a clear code violation, as doors are not allowed to project over the staircase.

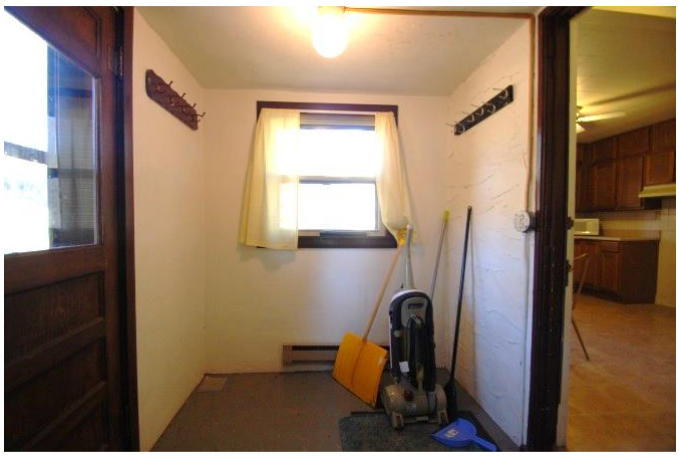


Figure 1-42. Mud Room 106 Looking north. (SRJA 2014)

Figure 1-43. Mud Room 106 Looking east through Door 105/2 into the Kitchen. (SRJA 2014)

Figure 1-44. Mud Room 106 Threshold detail at Door 105/2. (SRJA 2014)

Figure 1-45. Mud Room 106 Looking south toward basement stair. (SRJA 2014)

Figure 1-46. Mud Room 106 Looking at old west exterior wall before the addition was constructed. (SRJA 2014)

Figure 1-47. Mud Room 106 Looking west at Window 107. (SRJA 2014)

Figure 1-48. Mud Room 106 Looking west toward Window 104 and back door. (SRJA 2014)

Figure 1-49. Mud Room 106 Looking west at back Door 106/1. (SRJA 2014)

Existing Conditions - Structural

HS-06 is a wood framed single story structure. The foundation area consists Crawl Space 003 under the north portion of the building and a basement under the south portion. The basement was not part of the original construction and was excavated at a later date.

Basement

As originally constructed, there was a crawl space under the building. The original crawl space in the south portion of the building was reclaimed as a basement (Room 001) and was excavated to a lower depth to provide head room. The basement has a concrete slab-on-grade floor. New stone retaining walls were constructed inward approximately three feet from the face of the existing shallow foundation walls to provide for the deeper excavation (Figure S1). The retaining walls are present on the south, east and the north sides of the basement. The north retaining wall separates Room 001 from the Crawl Space 003. The thickness of the stone retaining walls could not be confirmed. These stone retaining walls extend up from the slab-on-grade and have a concrete cap covering the soil between the two walls. The concrete cap is cracked and there is some vertical displacement at the cracks. It is likely the soil between the original wall and the newer retaining wall has settled. There is no visible evidence that the cap is anchored to the stone retaining wall. Cracks are also visible in the stone retaining wall; however no substantial displacement was observed at these cracks.

Figure S1. Room 001 stone retaining walls looking southeast. (SEA 2015)

A wood girder is present running north-south in the approximate center of Room 001. The girder is a triple 2 x 8 (3 -1 ½" x 7" net). This girder is supporting the original floor joists. The girder is supported by 6 x 6 posts on each end and continues into the crawl space to the north. At the south end of this span in the basement, the post bears on top of the stone retaining wall (Figure S2). At the north end, the post extends down to below the slab-on-grade elevation (Figure S3).

It appears as if the slab-on-grade has a low spot as observed by an area where a grout material has been placed on top of the slab-on-grade at the post location (Figure S4). The post at this location is severely deteriorated immediately above the slab-on-grade and immediately below it and is easily probed with a flat screw driver (Figure S5). This deterioration has eliminated any support at the base of the post.

Figure S2. Room 001 post on retaining wall looking southwest. (SEA 2015)

Figure S3. Room 001 post buried in retaining wall looking west. (SEA 2015)

Figure S4. Room 001 low spot adjacent to post. (SEA 2015)

Figure S5. Room 001 deteriorated post base detail at north wall. (SEA 2015)

There is a sheet of plywood north of the rotted post. This plywood separates the basement area from the Crawl Space 003. The sheet of plywood is bowed outward (Figure S6). This is consistent with the post settling and moving downward. As the post settles, the joists that the post is supporting also lower. The plywood is wedged between the retaining wall that is not moving and the bottom of the floor joists that are moving downward with the post. As a result, the plywood is buckling or bowing from the force.

Figure S6. Buckled plywood. (SEA 2015)

Based upon review of the original construction drawings titled “Employees Residence” dated 10/10/33 the post location is not consistent with the original footing locations. The original drawings call for a 6” x 8” girder. The present girder most likely was not part of the original construction. The presence of a footing below the post is unknown.

Crawl Space 003

The original crawl space still exists under the north half of the building. The girder in the basement area extends into the crawl space area. The girder is supported by stone piers. Wood blocking is present between the top of the stone pier and the wood girder. The presence of a footing is unknown (Figure S7).

Figure S7. Crawl Space 003 Stone pier supporting wood girder. (SRJA 2015)

First Floor

The first floor framing consists of 2 x 10s (nominal) at 16-inches on center. The joists span from the foundation walls to the center wood girder.

The first floor is finished. No wall framing members were visible.

Cracks are present in many of the walls in Rooms 100, 101, 102, and 105 (Figures S8, S9, and S10). The cracks in Rooms 100, 101 and 102 are consistent with settlement. This could be the result of the post in the basement settling.

Other cracks in the first floor around the perimeter of the building are also consistent with settlement of the foundation walls.

Figure S8. Crack above Door 100/1. (SEA 2015)

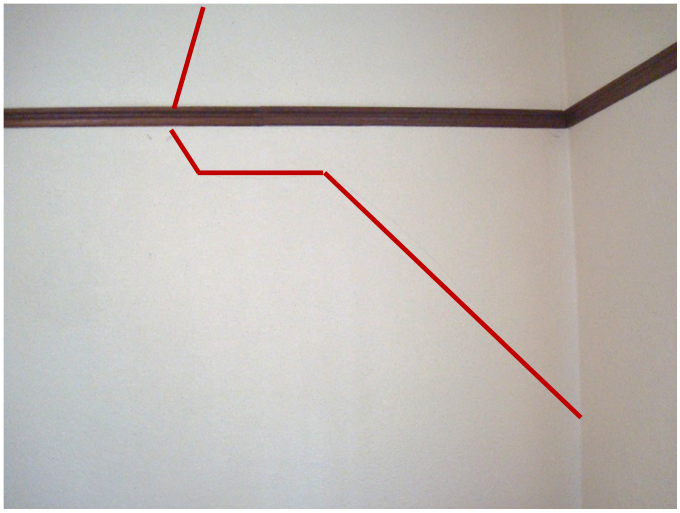


Figure S9. Crack in north wall of Room 101. (SEA 2015)

Figure S10. Cracks in ceiling of Room 101. (SEA 2015)

Attic

The attic framing consists of 2 x 6 (nominal) ceiling joists at 16-inches on center, 2 x 6 rafters at 16-inches on center and 2 x 6 ridge beams and hip rafters.

In the northeast quadrant of the attic a hip rafter is discontinuous. It is currently supported with a 2 x 4. The ceiling joist at this location should be strengthened.

Figure S11. Attic looking northeast. (SEA 2015)

Exterior Porch

The exterior porch is constructed of stone walls and stone paver slab-on-grade. There is a crack in the slab running from the northeast corner of the building south to the stone stairs (Figure S12). The bottom landing of the stone steps on the south end of the porch is also settling (Figure S13).

Figure S12. Crack in porch slab. (SEA 2015)

Figure S13. Bottom stair tread of porch stairs settling. (SEA 2015)

Building HS-6 has been previously underpinned. Drawings dated July 28, 2004 show an underpinning plan. According to the plan, resistance piers, or helical piers were to be installed at

the southeast corner of the building. The underpinning piers were to extend across the south edge of the east porch, then north along the east edge of the porch. As part of the underpinning the stairs at the south end of the porch were to be reconstructed. There is documentation dated December 20, 2004 from McCarthy Anderson Inc. to Ron Eilefson of MWR-Black Hills Contracting requesting an extension in their contract time. The letter indicates that the “drilled piers” had been installed by December 16, 2004. This is the same area that is currently showing signs of settlement. A vertical crack extends from grade to the top of the stone foundation along the south wall at the east side (Figure S14).

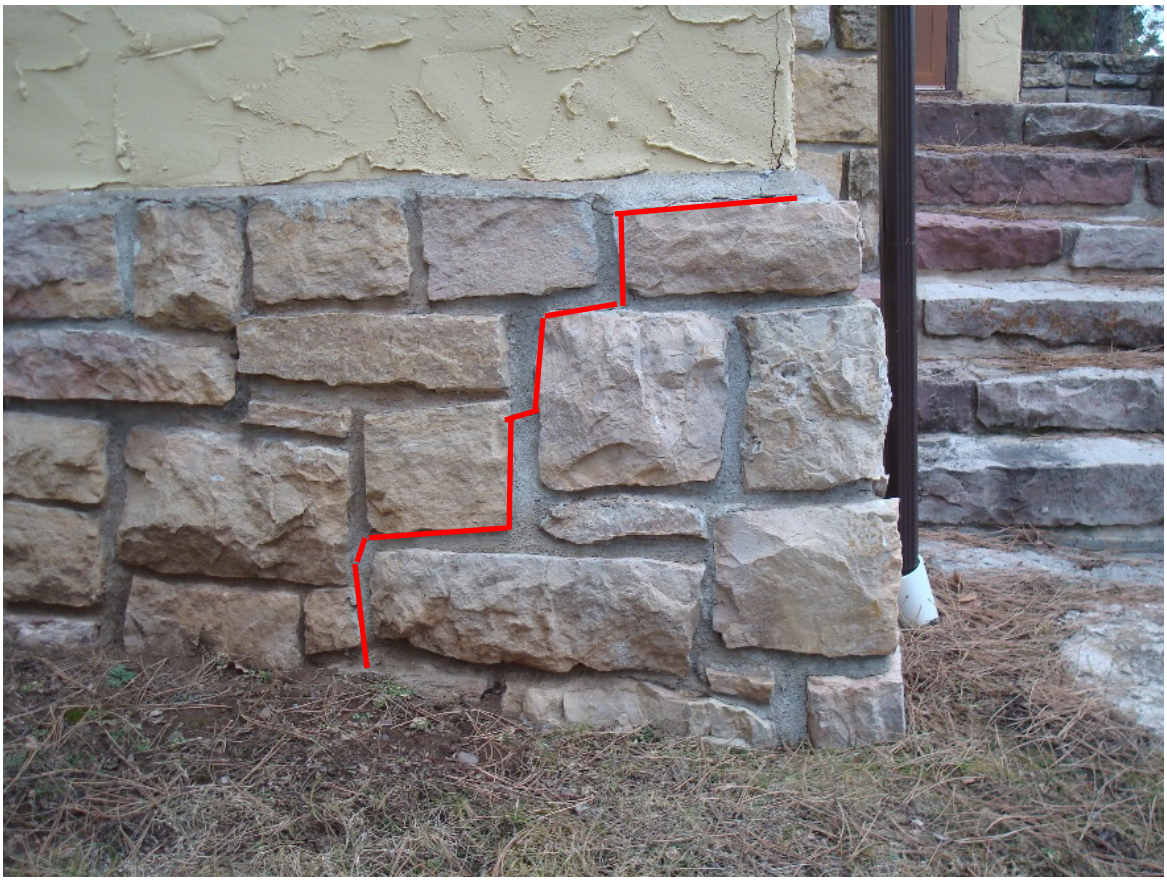


Figure S14. Crack in foundation wall. (SEA 2015)

Existing Conditions – Mechanical, Electrical and Plumbing

Figure MEP01. Residence – HS-6. (SRJA 2015)

Introduction

Henderson Engineers conducted a site visit on January 26th through the 29th of 2015. The existing mechanical, electrical, and plumbing (MEP) systems are consistent with residential equipment found in homes of this size. None of the MEP systems currently installed are original to the structure. The current MEP systems consist of 240/120V electrical distribution system, electric heating, electric hot water heating system, a domestic water system, and a drain, waste, and venting system.

This historic structure is not currently used during the winter season. The domestic water is shut off and the sanitary sewer is winterized with glycol during this time. Electricity and minimal heating remain operational during winter unoccupied periods.

Potable and irrigation water is supplied to the park from a remote pumping station. The pumps deliver water to a holding cistern located to the northeast of the site. The stored water is at a higher elevation than the rest of the site. From there the water is gravity fed through a series of water mains to supply the park with potable water and irrigation water.

A series of 4-inch and 6-inch sanitary sewer branches exit the historic structures and gravity drain into a private sewer main system owned by the National Park Service. This private sewer

main appears to be routed under the main drive between the visitor's center and the housing area.

The electrical service is supplied to the site by the Black Hills Corporation and is fed from a centrally located, single-phase, pole mounted transformer located on the southwest side of Building HS-06. The electrical service on the secondary side of the transformer is 240/120V, single phase, 3-wire. The service conductors extend overhead along the service road to supply the buildings with power.

The 2012 International Building Code and the 2011 National Electrical Code (NEC) were used for the evaluation of the MEP systems.

Heating and Cooling Systems

The original heating system, dated in the construction drawings from 1933, consisted of a fuel-fired steam boiler and a wood-burning fireplace. The boiler system served steam radiators located in each room fed by a looped pipe system in the attic. No cooling system appears in the original 1933 construction set.

The original boiler system was removed and replaced during a remodel that took place in the 1980s. Abandoned radiator and heating piping is still found in the Crawl Space 003 and also in the attic. Piping in the attic has some insulation that is suspect for asbestos (Figure M10). Currently an electric baseboard heating system (Figure M01) is installed throughout the building. Living Room 100 currently has a pellet burning stove installed but is not used (Figure M02, Figure M03, and Figure M04). The stove includes an electric igniter and fan for circulation.

Overall the existing heating and ventilation systems appear to be in good working order and are adequate for the building's intended use.

No makeup air is being provided for the exhaust systems. This creates the potential for outdoor air infiltration and the possibility of moisture and mold problems. Refer to the treatment recommendations section for additional information.

Figure M01. Example of electric baseboard heaters in Bedroom 102. (HEI 2015)

Figure M02. Living Room 100, Pellet burner and termination. (HEI 2015)

Figure M03. Pellet burner thermostat in Hall 103. (HEI 2015)

This building does not have a cooling system or a forced air system installed. Ceiling fans are installed throughout the first and second floors for general air circulation (Figure M04).

Figure M04. Example of ceiling fan in Living Room 100. (HEI 2015)

An exhaust hood is located above the stove in the Kitchen 105. It discharges exhaust air into the attic space (Figure M05). Per International Mechanical Code section 501.3, air shall not be exhausted into an attic space. Moisture can potentially build up in the attic creating deterioration and mold problems.

Figure M05. Kitchen 105, Exhaust hood and termination below the roof line. (HEI 2015)

Basement 002 has a dryer vent that terminates on the west exterior wall with a wall hood but is disconnected (Figure M06).

Figure M06. Basement 001, Dryer vent and termination. (HEI 2015)

Bath 104 has an existing ceiling mounted exhaust fan. It discharges exhaust air into the attic space (Figure M07). Per International Mechanical Code section 501.3, air shall not be exhausted into an attic space. Moisture can potentially build up in the attic creating deterioration and mold problems.

Figure M07. Bathroom – 108, Exhaust fan and termination. (HEI 2015)

Figure M08. Electric heater in Basement 001. (HEI 2015)

An exhaust fan, series of PVC pipes, and plastic membrane are in Crawl Space 002 for radon mitigation (Figure M09).

Figure M09. Basement 001, Radon system and termination on exterior of building. (HEI 2015)

Abandoned piping from the boiler system is existing in the Crawl Space 003 and Attic space (Figure M10).

Figure M10. Abandoned piping from old boiler system at attic left and Basement 003 right. (HEI 2015)

Plumbing Systems

Prior to entering the building, the water main splits to serve the potable water system in the building and the irrigation system on the site. The irrigation system pipe is routed above grade, through an anti-siphon pressure vacuum breaker, routes back below grade, and then runs to concealed sprinklers (Figure P02). The irrigation system is controlled by manually operated shut off valves. The potable water system is routed below grade and enters the building in the south side of Basement 002. A water shutoff valve is located exterior to the building (Figure P01).

Figure P01. Fire hydrant, shutoff valve, and irrigation vacuum breaker. (HEI 2015)

Figure P02. Irrigation vacuum breaker. (HEI 2015)

The original plumbing system consisted of domestic water piping system and a drain, waste, and vent piping system. The interior plumbing systems original to the structure were removed and replaced with an all plastic piping system in the remodel that took place in the 1980s.

Overall the existing water systems and drain, waste, and vent systems appear to be in good working order and are adequate for the building's intended use.

The basement (Rooms 001 and 002) plumbing systems consist of the domestic water entry, water heater (Figure P05), exposed water piping, and exposed drain, waste, and vent piping. The first floor plumbing systems serve the Kitchen 102, Bathroom 108, and exterior hose bibbs (Figure P03). A ¾-inch copper domestic water line enters the building through the basement wall on the south side of Basement 002 (Figure P05). The domestic water goes through a pressure reducing valve and continues to a domestic water meter, located in the corner of this room.

Figure P03. Wall hydrant. (HEI 2015)

Figure P04. Domestic electric water heater in Basement 001. (HEI 2015)

Figure P05. Domestic water entry in Basement 002. (HEI 2015)

The water then exits the meter to serve the building plumbing fixtures. All domestic water piping downstream of the water meter is cross-linked polyethylene (PEX) with brass fittings. The domestic entry does not currently have a building backflow preventer installed.

The sanitary waste piping is polyvinyl chloride (PVC) drain, waste, and vent (Figure P07). The first floor plumbing fixtures and floor drains located in Basement 001 drain into a 4-inch sanitary waste system that is routed below the basement floor and exits the building to the east (Figure P06). Sanitary cleanouts are located in lines prior to the line going beneath the basement floor. The 4-inch building sewer is routed to the private sewer system owned by the National Park Service.

Figure P06. Sanitary sewer cleanout. (HEI 2015)

Figure P07. Example of water and sanitary piping system in Basement 001. (HEI 2015)

The Kitchen 104 has a two-compartment stainless steel sink (Figure P08). Basement 001 has washing machine connections for hot water, cold water, and drain (Figure P090).

Figure P08. Stainless steel two-compartment sink in Kitchen 105. (HEI 2015)

Figure P09. Washing machine connections in Laundry 107. (HEI 2015)

Bath 104 has a counter mounted lavatory, white vitreous china water closet, and a molded fiberglass tub (Figures P10 and P11).

Figure P10. Lavatory and water closet in Bath 104. (HEI 2015-left, SRJA 2014-right)

Figure P11. Shower in Bath 104. (HEI 2015)

Storm water from the roof is drained via exterior gutters and downspouts. The downspouts are either daylighted at grade with corrugated plastic pipe or routed to below grade (Figure P12).

Figure P12. Example of gutter and downspout systems. (HEI 2015)

Electrical and Lighting Systems

The electrical service to the property is supplied by the Black Hills Corporation and is fed from a centrally located, single-phase, pole mounted transformer located on the south side of Building HS-06. The service conductors for each of the houses extend overhead along the service road via power poles located across the property. The electrical service on the secondary side of the transformer is 240/120V, single phase, 3-wire. The service conductors for HS-06 extend from the transformer utility pole and are routed overhead to a weatherhead located on the south side of the house (Figure E01). From the weatherhead they are routed in conduit to a meter on the exterior of the house. The meter is an Elster digital meter (Figures E02 and E03). From the meter the conduit pokes through the wall above ground and terminates in the electrical service panelboard.

Figure E01. Service conductors at weatherhead on the south side of the house. (HEI 2015)

Figure E02. Exterior electrical service meter on the south side of the house. (HEI 2015)

Figure E03. Exterior electrical service meter on the south side of the house. (HEI 2015)

The electrical service panelboard is located on the south wall of the Basement 001 (Figure E04). It is a 225A, 42-pole, 240/120V single phase, 3-wire panelboard with a 225A main circuit breaker (Figure E05). This panelboard serves all of the power loads in the building including lighting, HVAC, kitchen equipment and general purpose receptacles. The panelboard is manufactured by Westinghouse and appears to be in good condition. The date of installation could not be confirmed. There are currently no arc fault circuit interrupter (AFCI) circuit breakers in the panelboard which are required in residential construction by the NEC. Overall the existing electrical system appears to be in good working order.

Figure E04. Electrical service panelboard located in Room 001. (SRJA 2014)

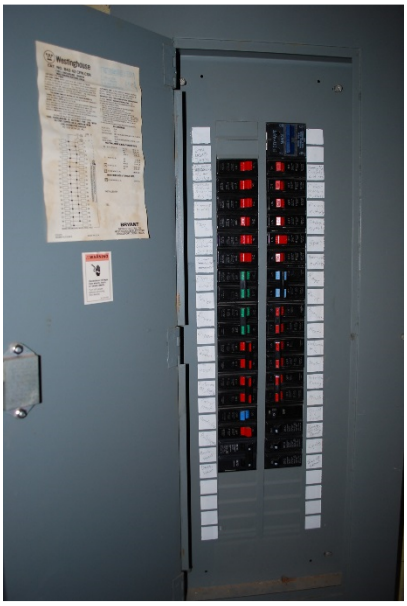


Figure E05. Electrical panelboard located in Room 001. (SRJA 2014)

The electrical distribution and wiring is consistent with methods used in residential construction. The distribution wiring is a combination of exposed NM cable and conductors run in metallic

raceways. Most of the branch circuit conductors coming out of the main panelboard are exposed NM cable. General use grounded duplex receptacles are installed throughout the house. Ground Fault Circuit Interrupting (GFCI) receptacles are installed in the restroom and kitchen.

There is an Econotrol Peak Demand Controller next to the panelboard in Basement 001 that appears to be connected, but is not in use (per the park maintenance staff). There is an abandoned electrical panelboard located near Door 105/2 in Kitchen 105 that is now being used as a junction box. The electric water heater and basement wall heater located in Basement 001 do not appear to have local disconnect switches but the panelboard serving them is within sight which is acceptable per the NEC.

The interior lighting throughout the house is a mixture of incandescent and compact fluorescent fixtures that appear to be in good condition. The exterior door on the west side of the house has a glass jar sconce light with a compact fluorescent screw base lamp mounted to the right of the door. The exterior door on the southeast side of the house has a sconce fixture with a blue incandescent lamp mounted to the right of the door. The exterior lighting is controlled individually by a toggle switch located on the interior side of each door.

Basement 001 has two porcelain socket fixtures (Figure E06). One is lamped with a compact fluorescent screw base lamp and the other is lamped with an incandescent A19 lamp. They are controlled by a toggle switch located near the door to the basement at the bottom of the stairs. Basement 002 has a porcelain socket fixture with an incandescent lamp and is controlled by a pull chain.

Figure E06. Light fixtures located in Basement 001. (SRJA 2014)

Living Room 100 has a 5-blade ceiling fan with a 3-lamp glass shade light kit and incandescent candelabra lamps (Figures E07). There are also a total of four, 2-lamp historic incandescent candle sconces with incandescent candelabra lamps (Figure E08). Two sconces are mounted

on each end of the north wall and two are mounted on each end of the south wall. The sconces and the ceiling fan are switched separately with toggle switches

Figure E07. Ceiling fan located in Living Room 100. (HEI 2015)

Figure E08. Historic light fixture located in Living Room 100. (SRJA 2014)

Bedroom 101 has a 4-blade ceiling fan with a single lamp light kit and screw base incandescent lamp (Figures E09). It is missing a glass globe cover for the lamp. It is controlled by a toggle switch.

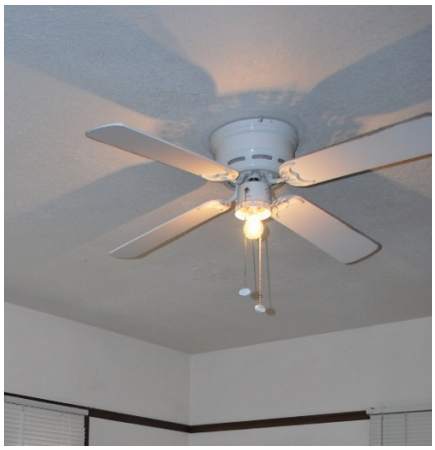


Figure E09. Ceiling fan located in Bedroom 101. (SRJA 2014)

Bedroom 102 has a glass globe incandescent fixture mounted in the center of the room. (Figure E10). It is controlled by a toggle switch.

Figure E10. Light fixture located in Bedroom 102. (HEI 2015)

Bedroom Closets 101A and 102A each have an incandescent porcelain socket fixture located on the interior side of the closet door. Each closet fixture is controlled with a pull chain.

Hall 103 has a glass globe incandescent fixture mounted in the center of the hallway (Figure E11). It is controlled by a toggle switch located near Bedroom 101.

Figure E11. Light fixture located in Hall 103. (SRJA 2014)

Bathroom 104 has a ceiling mounted LED retrofit downlight above the tub (Figure E12) and a decorative 4-lamp linear glass shade incandescent bathroom sconce mounted above the mirror (Figure E13) with incandescent lamps. The LED downlight was not operational at the time of the site visit. The decorative bathroom sconce was controlled by a toggle switch.

Figure E12. Light fixture located in Bathroom 104. (HEI 2015)

Figure E13. Decorative sconce located in Bathroom 104. (HEI 2015)

Kitchen 105 has a 4-blade ceiling fan with a single lamp glass globe light kit and an incandescent lamp (Figure E14); a recessed light above the sink (Figure E15); and a glass globe fixture with two incandescent lamps (Figure E16). The ceiling fan is controlled by 3-way toggle switches and the sink light and alcove glass globe fixture are controlled by separate toggle switches.

Figure E14. Ceiling fan located in Kitchen 105. (HEI 2015)

Figure E15. Light fixture located above the skin in Kitchen 105. (SRJA 2014)

Figure E16. Light fixture located in Kitchen 105. (SRJA 2014)

Basement Stair Hall 106 has a glass globe incandescent fixture mounted above the stairs (Figure E17) with an incandescent lamp.

Figure E17. Light fixture located above the stairs in Basement Stair Hall 106. (SRJA 2014)

There is no lighting installed in the attic.

The exhaust fan in Bathroom 104 has a toggle switch disconnect located next to the bathroom mirror.

The telephone service runs in conduit underground to the telephone demark point located on the south side of the exterior of the house (Figure E18). No data distribution system appears to be installed.

Figure E18. Telephone service entrance located on the south exterior of the house. (HEI 2015)

Fire Alarm Systems

The fire alarm system consists of hardwired smoke detectors with battery-backup. There is one located in Basement 001, in Bedrooms 101 and 102, and in Hall 103.

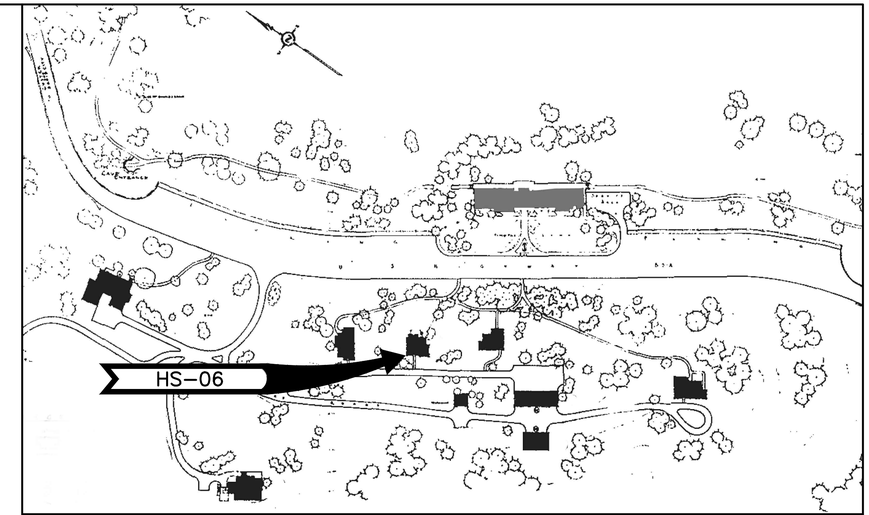
Fire Protection Systems

The house has two hand activated dry chemical fire extinguishers. The first is located in Basement 001 and the second is located in Kitchen 105 (Figure F01).

Figure F01. Fire extinguishers. (Basement 001-Left, Kitchen 105-Right) (HEI 2015)

HS–06 QUARTERS
HISTORIC STRUCTURES REPORT
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK

EXISTING CONDITION DRAWINGS
HOT SPRINGS, SOUTH DAKOTA



HISTORIC HOUSING AREA, WIND CAVE NATIONAL PARK, HOT SPRINGS, SOUTH DAKOTA
(WIND CAVE NATIONAL PARK HISTORIC CONTEXTS AND NATIONAL REGISTER GUIDELINES REPORT, 1992)

HS–06 QUARTERS (SRJA 2014)

INDEX OF DRAWINGS

00 COVER

ARCHITECTURAL
A0 BASEMENT/FOUNDATION FLOOR PLAN
A1 FIRST FLOOR PLAN
A2 ROOF PLAN
A3 EAST ELEVATION AND SOUTH ELEVATION
A4 WEST ELEVATION AND NORTH ELEVATION

ELECTRICAL
E0 BASEMENT/FOUNDATION FLOOR PLAN
E1 FIRST FLOOR PLAN

MEASURED IN NOVEMBER 2014

HISTORIC STRUCTURES REPORT	TITLE OF PROJECT EXISTING CONDITION DRAWINGS HS–06 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK	DRAWING NO. 108 / 128871	
UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE DENVER SERVICE CENTER	REGION MIDWEST / COUNTY CUSTER / STATE SOUTH DAKOTA	PMIS/PKG NO. 158029	
		SHEET 1 OF 8	

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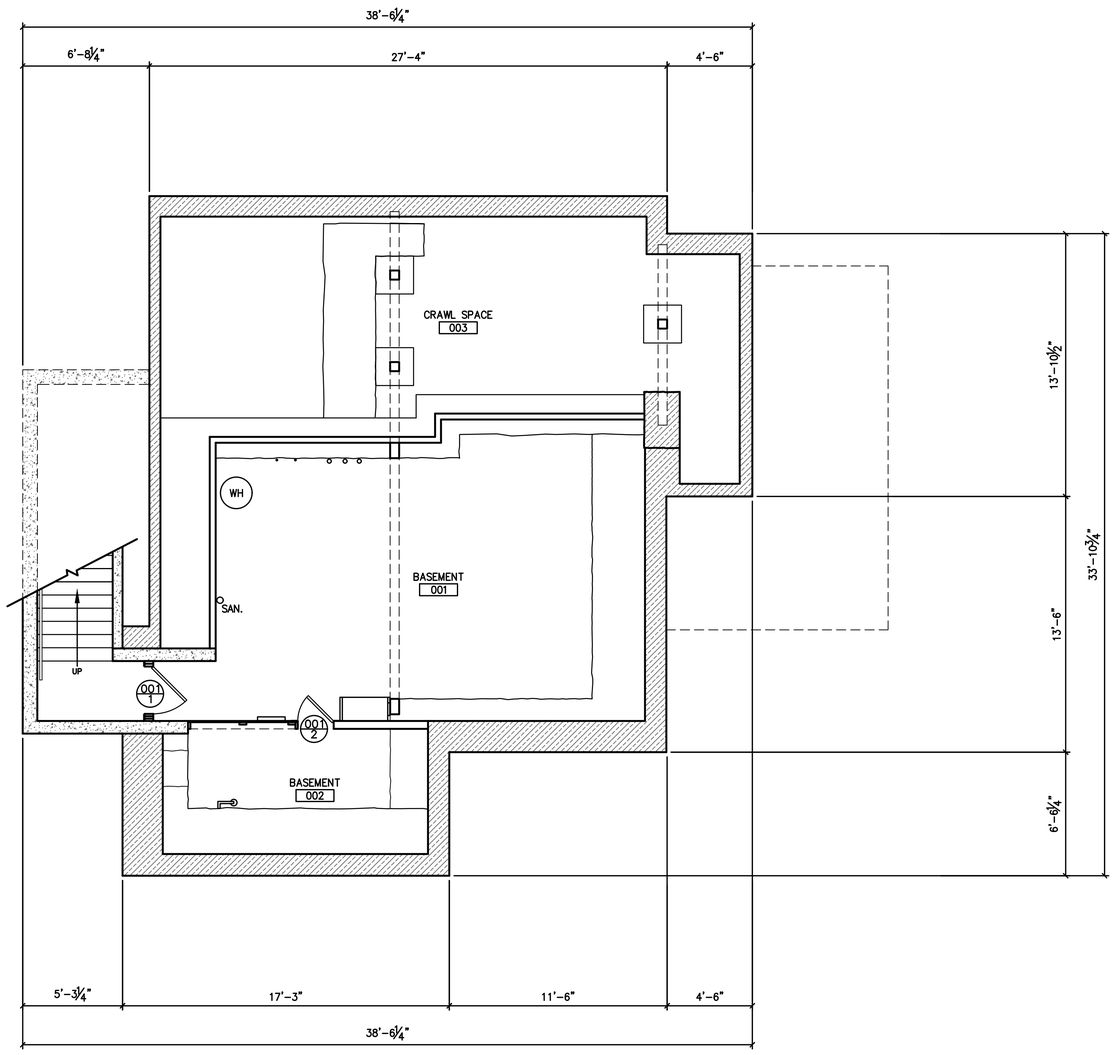


DRAWING KEY:

MASONRY FOUNDATION WALLS

CONCRETE FOUNDATION WALLS

1 / A0 EXISTING HS-06 BASEMENT PLAN
1/4" = 1'-0"

4 0 4 8
SCALE OF FEET

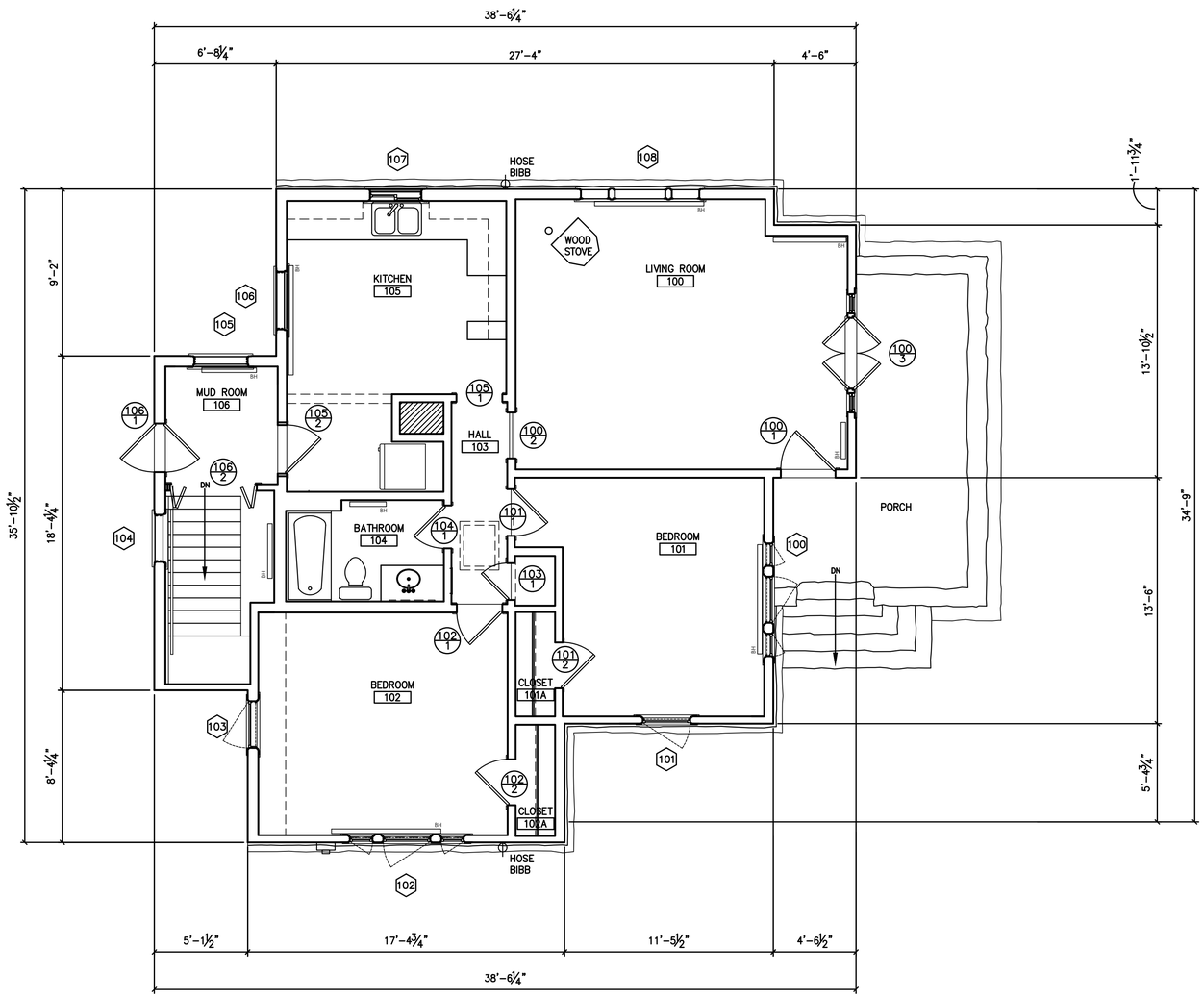
Susan Richards Johnson & Associates, Inc.
818 GRAND BLVD.
SUITE 1150
KANSAS CITY, MO
64106
Ph. 816-474-0900
Fax 816-474-0909

DESIGNED: AG
CADD: AM
TECH. REVIEW: AG
DATE: 10/23/15

SUB SHEET NO. A0

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
HS-06
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108
128871
PMIS/PKG NO. 158029
SHEET 2 OF 8



1 A1 EXISTING HS-06 FIRST FLOOR PLAN
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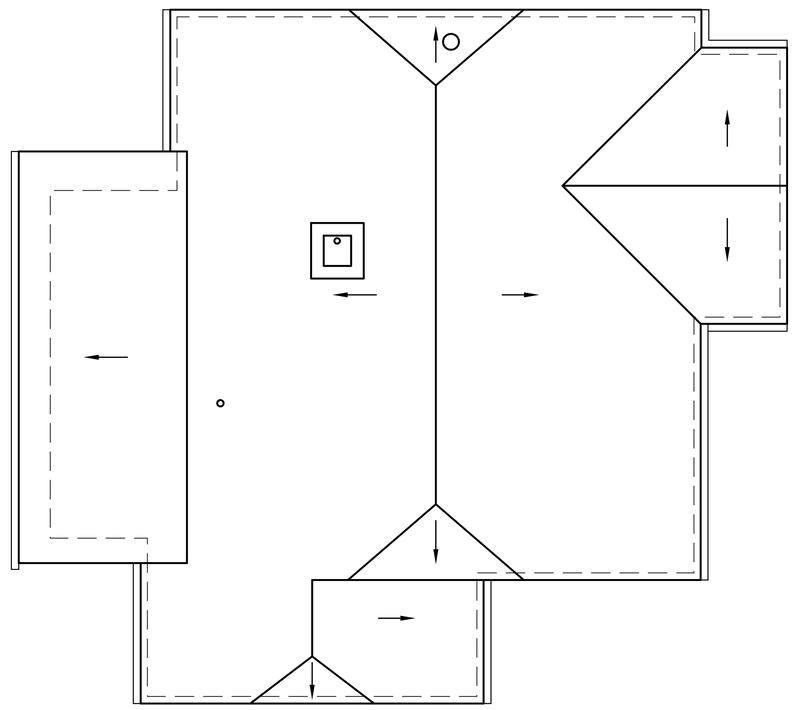

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1/4" = 1'-0"

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1 A3 EXISTING HS–06 EAST ELEVATION
1/4" = 1'–0"

2 A3 EXISTING HS–06 SOUTH ELEVATION
1/4" = 1'–0"

4 0 4 8
SCALE OF FEET

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HOT SPRINGS, SOUTH DAKOTA

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128871
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SHEET 5 OF 8

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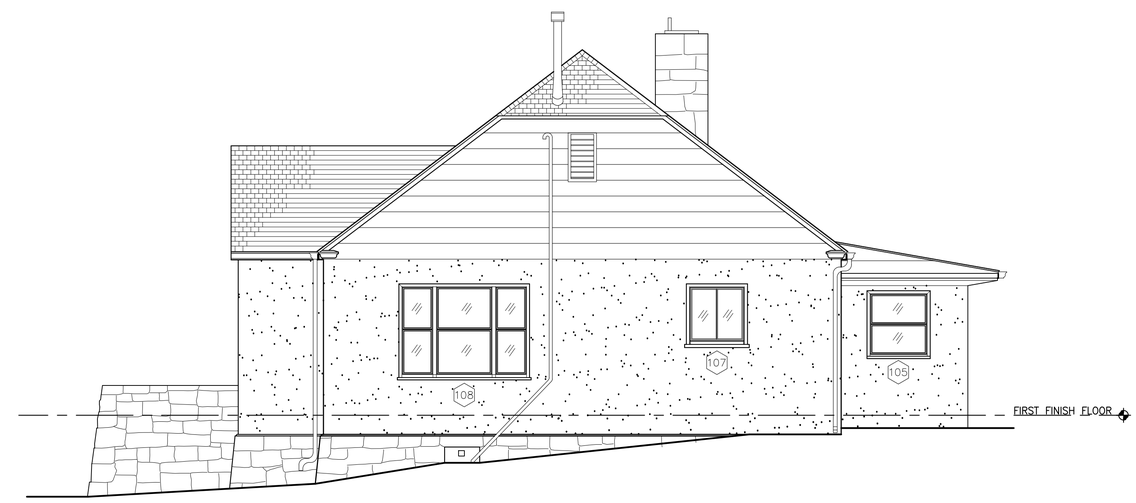

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SCALE OF FEET

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SUB SHEET NO. A4

TITLE OF SHEET
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WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108
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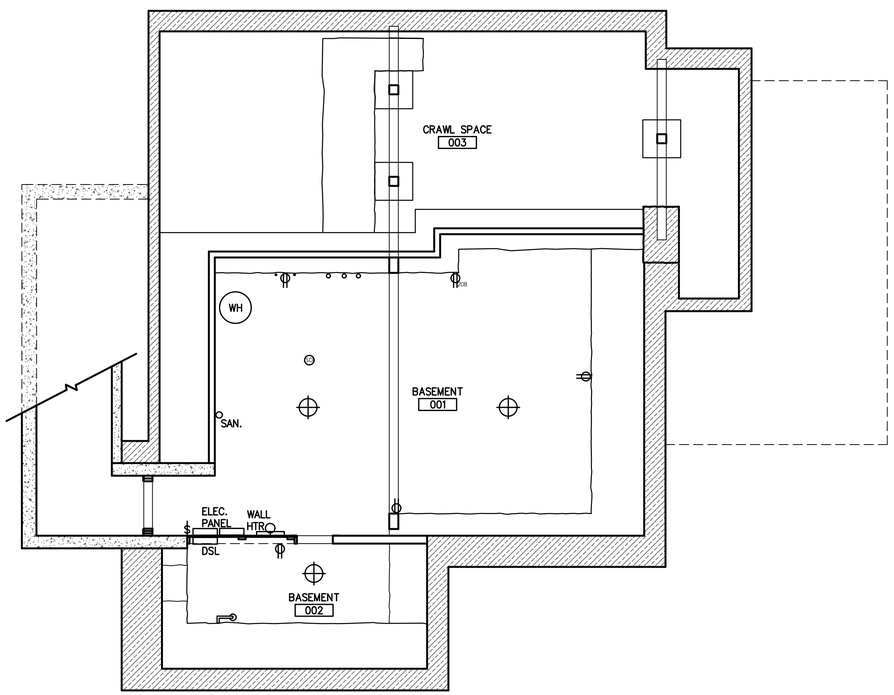

1 / E0 EXISTING HS-06 BASEMENT ELECTRICAL PLAN AND REFLECTED CEILING PLAN
1/4" = 1'-0"

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SCALE OF FEET

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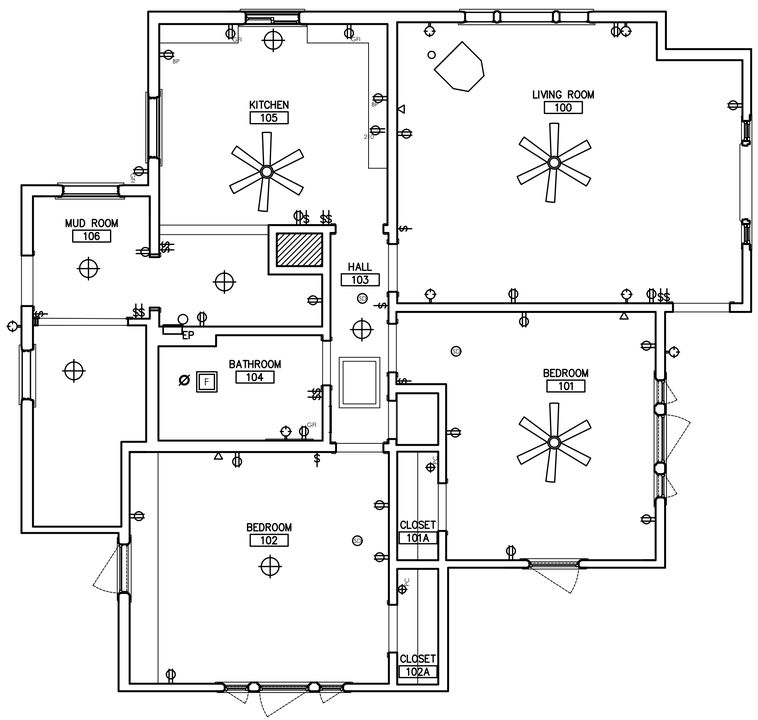

1 / E1 EXISTING HS-6 FIRST FLOOR ELECTRICAL PLAN AND REFLECTED CEILING PLAN
1/4" = 1'-0"

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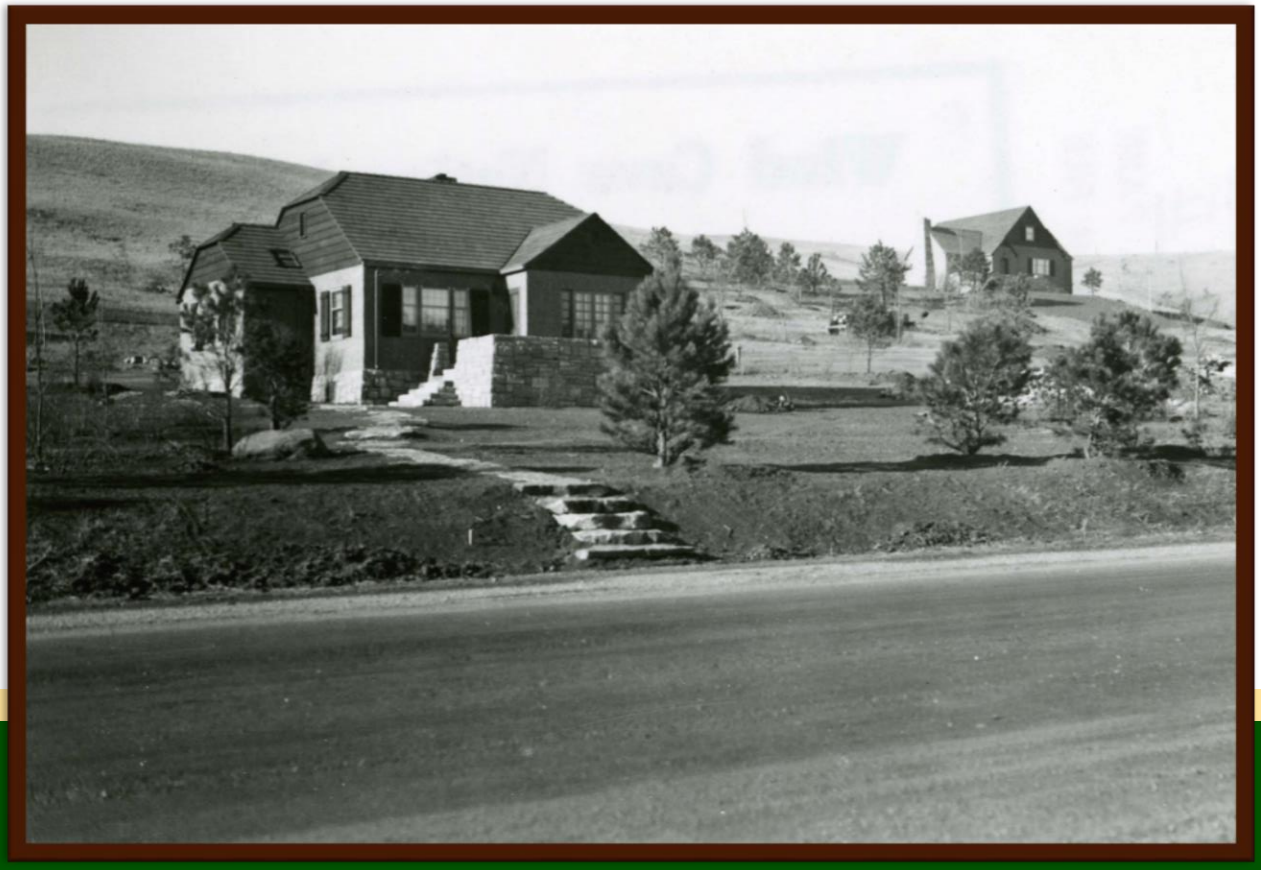


HS-06 ca. 1930s. (WICA Museum Collection #WICA 4137)

Treatment Recommendations

Treatment Recommendations

Introduction

This Historic Structure Report for the HS-06 Quarters is intended to serve as the primary document to provide recommended treatments for the historic residence. This section of the report provides treatment recommendations to address the immediate preservation and stabilization of the existing historic fabric, and to establish long term rehabilitation and maintenance needs. The immediate recommendations are to be used as a guide for the preservation of the existing structure, while the long term treatment recommendations are items to consider when future maintenance or rehabilitation work occurs.

The period of significance the Historic Housing Area at Wind Cave National park is established to be from 1928 to 1942. HS-06 was initially constructed in 1934. While the existing structure retains a substantial amount of architectural fabric dating to the period of significance, a few important exterior character-defining features are missing. Historical photographs have produced a fairly clear image of the exterior of the house throughout the period of significance, including photographs of some of the missing elements. These missing exterior elements include the divided lite wood double-hung windows and the rustic board and batten shutters. Interior missing features include the historic lighting fixtures.

The current use for the HS-06 Quarters is for seasonal housing for park staff and that use is not anticipated to change in the future. Identifying an appropriate historic treatment approach for the residence is important, in order to serve as a guideline for planning and design purposes.

Historic Treatment Approaches

The identification of the possible four following historic treatments is based upon the *Secretary of the Interior's Standards for the Treatment of Historic Properties*:

> ***Preservation:*** *Sustaining the existing form, integrity, and materials of a property.*
>
> ***Restoration:*** *Accurately depicting the form, integrity, and materials of a property as it appeared during a particular period.*
>
> ***Rehabilitation:*** *Compatible use of a property through repair, alterations, and additions while preserving significant historical features.*
>
> ***Reconstruction:*** *Depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape building, structure, or object at a specific period of time and in its historic location.*

Selected Historic Treatment Approach - Rehabilitation

Rehabilitation was selected as the treatment approach in order to allow for the retention of historic authenticity while accommodating the installation of modern amenities. HS-06 is in very good overall condition, requiring maintenance and some rehabilitation to update finishes.

Rehabilitation work associated with these repairs and maintenance will affect the exterior and interior of the house and will also affect the grading and the exterior concrete landing and stone patio west of the house. Work will need to be coordinated and designed to provide the necessary stabilization and repairs, as well as to protect the building's historical features.

While rehabilitating the structure, plans should be made to accommodate for these required repairs: excavation of grade at the west elevation; stucco wall repair and painting; stone foundation repointing; window replacement; structural stabilization in the attic and in the basement; interior plaster repair; and general maintenance and repair items. Great care should be taken to respect the existing historic fabric of the building, a majority of which dates to the original 1934 construction.

Construction Impact

All construction activities that may impact the grading or soils surrounding the building must be closely monitored by a National Park Service Archeologist. No demolition, excavation or digging can occur without the required notifications, approvals and documentation. Section 106 compliance is also required for any construction activities that may impact the historic structure and surrounding landscape.

Building Egress Fire Code Evaluation

The one story HS-06 was originally constructed in 1934 for staff housing. The structure consists of exterior stucco-clad wood load bearing walls with interior wood floor, wall and roof framing. The foundation is reinforced concrete and stone.

The structure is typically used for seasonal staff housing. The roughly 1,100 square foot house contains two bedrooms and one full bathroom. The park anticipates the continued use of the building as seasonal housing in the near future. This residence does not meet requirements of the ABAAS for accessibility. The park has other residential facilities to accommodate for accessible housing needs.

The applicable codes and guidelines for the project are:

- 2012 International Building Code (IBC)
- 2012 International Existing Building Code (IEBC)
- 2012 International Residential Code (IRC)
- National Fire Protection (NFPA)
    - 2013 Standard for the Installation of Sprinkler Systems (NFPA 13)
    - 2013 National Fire Alarm and Signaling Code (NFPA 72)
    - 2012 Life Safety Code (NFPA 101)
- Structural Fire Reference Manual 58, National Park Service.
- Department of the Interior Housing Management Handbook, 2008.

For fire egress purposes, the building would be reviewed as follows:

- Type VB Construction, Currently Unsprinklered.
- 'R3' Residential Occupancy, based on the use as a *Congregate Residence* with sixteen or fewer persons. The definition of a Congregate Residence is one that contains sleeping units where residents share bathroom and/or kitchen facilities.

Egress Review:

- R310.1 - The first floor bedroom windows are out-swing casement windows. The windows were replaced within the last ten years and appear to meet egress requirements.
- R311.2 - First floor egress is compliant, as there are two egress doors in the main portion of the first floor which lead directly outside.
- R313.2 – An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings. HS-03 meets the *Exception:* an automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system. HS-03 is an existing building and there is currently no fire sprinkler system installed.

- R314 - Installation of a hard-wired fire alarm/smoke detection system on the first and second floors is required. The system is currently installed and has a battery back-up system. No exterior alarm notification was found.

The 2012 International Existing Building Code, Chapter 12, addresses Historic Buildings. The intent of the IEBC, Chapter 12, is to provide a means for the preservation of historic buildings. Repairs to any portion of a historic structure are permitted (IEBC-2012.1) to be made with original or like materials and methods of construction. Since the provisions of the IEBC are to be utilized for future potential projects, the building code or person having jurisdictional authority, may require a report from the registered design professional to address compliance issues. The report should identify compliance with Chapter 12, identify each safety feature that is not in full compliance, and describe how the intent of the provisions are complied with by establishing an equivalent level of protection. Existing door and stairway widths will be allowed to remain in their existing condition (with the provision of the local authority having jurisdiction making the determination that sufficient width and height for a person's passage through the opening has adequate capacity and meets the occupant loading requirements).

The existing structure as well as any future rehabilitation work should be coordinated with the Park Structure Fire Management Plan and address identified deficiencies.[11] The park may consider posting building evacuation diagrams. Occupants of the residence should be trained for fire prevention for their specific quarters. They should learn how to report fires and how to safely evacuate in the event of an emergency.[12] Pre-occupancy training may also include how to test smoke alarms and how to use fire extinguishers.[13]

[11] Structural Fire Reference Manual 58, National Park Service, 2015, 5.
[12] Department of the Interior Housing Management Handbook, April 2008, 6.
[13] Ibid, 16.

Treatment Recommendations

With the intent of protecting the future integrity of the existing historic fabric and character defining features of the HS-06 Quarters, the following treatment recommendations are proposed. These recommendations were developed based on the assessment of the building during the two site visits in fall of 2014 and winter of 2015 and provide direction for immediate issues and long term historic treatment work.

All architectural and structural recommendations are in keeping with the *Secretary of the Interior's Standards for Rehabilitation* as a guide. The goal of any sensitive preservation or rehabilitation project is to retain and preserve the extant original historic materials with the least amount of visible alterations to the structure, while supporting the proposed interpretive use of the building.

Immediate Treatment Recommendations

These immediate recommendations are based on the stabilization and maintenance of the existing structure in its current configuration. A useful reference for small building caretakers is the National Park Service, *Preservation Brief 47: Maintaining the Exteriors of Small and Medium Size Historic Buildings* by Sharon C. Park, FAIA. This brief outlines example maintenance schedules and checklists, as well as making recommendations for preparation of maintenance and a means for determining qualified contractors who will understand the project objectives for the structure's preservation.

The cost estimate associated with the Immediate and Long Term Treatment Recommendations can be found in Appendix C.

General Treatment Recommendations

All suspect building surfaces and materials should be tested for lead based paint and asbestos containing materials prior to the initiation of any work. Testing should be done by a qualified hazardous materials consultant. Abandoned piping in the attic and Crawl Space 003 are suspect. Conduct an independent radon test and inspection of existing systems. Repair, as required to meet current code.

Immediate Treatment and Maintenance Repair Recommendations

Refer to the Treatment Recommendation Drawings

Immediate Architectural and Structural Exterior Repair Recommendations

1. Re-grade –
   Re-grade along the west and a portion of the north elevations to achieve a minimum of 4-inches below the top of the stone foundation walls. Install a French drain to daylight and a swale. The grade is in contact with the wood frame stucco walls and is causing advanced deterioration in these locations.

This work will require the demolition and reconstruction of the existing concrete landing and stone patio along the west elevation to be reconstructed at a lower elevation. Install a soft joint between the new concrete and the stone/concrete foundation. Repoint the newly-exposed stone foundation, as required.

2. Exterior Stone Foundation Cracks –
   Repoint crack near east corner of south elevation. This crack is consistent with settlement although this corner of the house was underpinned in 2004. A possible reason for this cracking is that the underpinning piers previously installed have failed. Another possibility is that this portion of the building is stable and the rest of the building is experiencing settlement. A third option is that the underpinning is working and the cracks were not repaired after the underpinning piers were installed.

   After repointing, monitor this corner of the foundation, as well as the porch floor. If the cracks continue to project through the exterior walls, a treatment plan and design for the installation of additional underpinning stabilization for the foundation walls and porch may be required. Further study should be performed to analyze the potential for ongoing settlement of HS-06.

3. Stone Foundation –
   Clean existing stone foundation, terrace and steps. Repoint, as required. Match historic mortar. Repair/replace mortar wash at the top of the wall, as required. Fill cracks and monitor seasonally for further movement.

4. Stone Porch –
   - Repoint crack in stone porch floor. Monitor crack for further movement. This may be indicative of additional settlement of the underpinning portion of the porch, or of the un-stabilized east wall of the house.
   - Spot re-point porch, as required. Match historic mortar.
   - Install a soft joint between the stone terrace porch and the stucco walls. Install sealant between stone walls and the stucco walls.
   - Install new galvanized painted handrail at the front steps.
   - Remove existing sunken stone landing at base of stone steps. Install a new concrete pad and tie in with steps to prevent further settlement. Reinstall stone landing.
   - Repair sheet metal liner at top of through-wall scupper opening.

5. Stone Chimney –
   - The stone chimney requires cleaning spot repointing and mortar wash repair.
   - Inspect PVC pipe in flue. If not used, remove.
   - Install new pre-finished metal chimney cap, per SMACNA standards.
   - Install a cricket, if required.

6. Replace Windows –
   Replace non-historic metal window sashes and storm windows in Living Room, Kitchen and Mud Room with aluminum-clad wood insulated windows (Windows 104, 105, 106, 107 and 108). Total of seven openings. The existing metal window sashes in these spaces are not energy efficient and are not in good working condition. Windows in the bedrooms have already been replaced with aluminum wood clad egress windows. These can be retained until a future phase of construction.

   Select a historically appropriate window and install to retain interior historic stained trim. Restore existing historic wood trim and sills and paint exterior. Stain or paint interior of new windows to match the surrounding trim. Match exterior aluminum color to the historic paint color determined in the paint test.

7. Stucco –
   Repair cracks and crazing in stucco. These are prevalent on the north and west elevations, with a few on the south and north elevations.

8. Paint –
   - Paint exterior stucco after repairs are completed. Paint exterior stucco after repairs are made. New paint color to match historic stucco color, as defined in the Volume I, Historic Building Materials, Stucco section of this report. A Benjamin-Moore paint color match was determined, but must first be sampled, as recommended.
   - Trim color to match the historic trim color, as defined in the historic finished report.

9. Wood Louvers –
   Inspect all open wood louvers in the attic. Replace screens, as required.

10. Storm Door 100/1 –
    Remove existing deteriorated storm door. Install new storm door.

11. Storm Door 100/3 –
    Restore existing deteriorated Storm Door and two sidelights 100/3. Weatherstrip doors and sidelights. Restore hardware. Paint doors and sidelights.

12. Re-route radon vent –
    Re-route existing exposed radon vent. Explore installing new PVC pipe through chimney flue, if possible.

13. Replace light shade –
    Install a glass shade over the light adjacent to Door 106/1.

14. Inspect downspout drains –
    Reinstall or install new downspout extensions to direct water away from the foundations.

15. Remove existing pellet stove flue from north roof. Patch sheathing and roofing, as required to match the existing. Patch the interior plaster ceiling, as required.

16. Door 106/1 –
    - Repair screen at storm door.
    - Verify doors have tempered glass. Replace, as required.

17. Concrete threshold –
    Remove existing deteriorated concrete threshold at Door 106/1. Install new concrete threshold to match the existing.

18. Rehabilitate/paint exposed foundation vents. Replace if deteriorated. Consider replacing south vent with a lattice style vent to match historic photographs.

19. Consider installing gutter covers to prevent pine needles from clogging the gutters.

Immediate Architectural and Structural Interior Repair Recommendations

20. Attic Framing -
    In the northeast quadrant of the attic one hip rafter has a 2 x 4 support down to the ceiling joist framing. The ceiling joist should be strengthened by adding two sister joists to it. This may be contributing to cracks in the ceiling in Room 100.

21. Basement 001/002 retaining walls –
    - The retaining walls in the basement area have some cracks. The walls appear to be functioning adequately. The cracks should be tuck-pointed where the joints are cracked.

    - The caps over the retaining walls are cracked and have settled. These should be removed and replaced. The new caps should be reinforced and anchored into the existing foundation wall and the top of the stone retaining wall.

22. Basement 001 wood post –
    The post supporting the girder at the north end of Room 001 should be removed and replaced. The girder each side of the post should be shored before any work is to be performed. Once installed, the posts could be used to slowly raise the floor back to its original elevation. The void in the wall resulting from the post removal should be formed and filled with concrete. A new bearing pad should be anchored into the stone retaining wall and poured with concrete. The original post could be cut to the correct length then be re-used if desired. B/TS2 shows a detail of this bearing pad.

    If repair of the post is delayed, then temporary shoring should be installed adjacent to the post as soon as possible.

There is cracking present on many of the first floor interior walls. The cracks are consistent with settlement of the foundation walls. The post discussed above is contributory to many of the cracks.

23. Basement 001 floor repair –
    Remove existing cracked and deteriorated concrete floor filler in center of floor. Clean concrete, apply bonding agent and new concrete floor leveler to infill depression in the floor.

24. Reconnect dryer vent through north wall.

25. Crawl Space 003 –
    - Insulate wood dividing wall between Crawl Space 003 and Room 001.
    - Inspect existing insulation in first floor joists throughout the Crawl Space 003 and install new, as required.
    - Install foundation wall insulation in Crawl Space 003.
    - Install new 12 mil vapor barrier throughout Crawl Space 003.
    - Ventilate Crawl Space 003. The existing foundation vent in the north wall is covered and used for the dryer vent and radon pipe discharge. Relocate these items to other locations and restore foundation vent. Potentially install an additional foundation vent for better circulation.

26. Restore Door 100/3 –
    The existing French doors and sidelights are in overall deteriorated condition and require restoration. Restore and reinstall existing hardware. Weatherstrip doors.

27. Window Finish Rooms 101 and 102 –
    - Finish the interior of the existing bedroom egress windows. These were installed and never finished. Total 7 openings. These are to be painted or stained to match the surrounding finish.
    - Reinstall the apron that was installed upside down at Window 100 in Bedroom 101.
    - Install finish trim, as required at Windows 100 and 101.

28. Door 104/1 –
    Verify Door 104/1 has tempered glass. Replace, to match the existing, as required.

29. Pellet Stove –
    Remove existing pellet heating stove and all related accessories and chimney flue. Restore and paint plaster ceiling. Repair flooring where stove is removed, if required.

30. Plaster-
    After structural stabilization in the attic and in the basement is completed, repair cracks in throughout the house in Rooms 100, 101, 102 and 105. Paint walls and ceilings when finished.

31. Mud Room 106 –
    Paint walls, ceiling and steps in Mud Room 106. Paint exposed conduit.
    Remove existing bi-fold doors at basement stairs. This is a code violation to have the doors swing out over the stairs. If safety is a concern with the open stairs, install a low gate or partial height wall to swing into the Mud Room.

32. Restore Door 105/2 where hardware was changed. Verify door has tempered glass. Replace, as required.

Mechanical/Plumbing/Electrical/Fire Protection Recommendations

Mechanical

33. It is recommended to inspect all existing ventilation openings to the crawl spaces and the attic to verify that they are free of obstructions. Install screens over all openings to prevent insect and/or animal infestation.

34. The existing HVAC systems should be thoroughly inspected by a qualified service technician and repaired to operational condition or replaced.

35. The Bathroom 104 exhaust fan discharges air directly to the attic space should be re-ducted directly through the roof and a roof cap should be added at the penetration (IMC Section 503.1). This is important because warm, moisture laden air discharged into the attic can lead to moisture damage and mold growth.

36. The kitchen exhaust hood is ducted to discharge air directly to the attic space should be re-ducted directly through the roof and a roof cap should be added at the penetration. This is important because warm, moisture laden air discharged into the attic can lead to moisture damage and mold growth.

37. Verify that the existing equipment including accessories being reused for this project are not damaged and are in good working order.

38. Clean existing equipment and equipment components being reused for this project.

39. Lubricate existing equipment being reused for this project in accordance with manufacturer's written instructions.

40. It is recommended for all ductwork penetrations to the exterior of the building to have backdraft dampers installed unless not recommended by the manufacturer of the equipment in which the ductwork serves.

Plumbing Systems

41. Verify that the existing equipment including accessories being reused for this project are not damaged and are in good working order.

42. The entire system including the water and drain, waste, and vent systems and all accessories should be inspected by a qualified technician and repaired as needed.

43. If not existing, provide new access panels for existing plumbing at showers and bathtub or at any other location requiring maintenance access.

44. All vent piping penetrating through the roof should be 3-inch diameter minimum (IPC Section 903.2).

45. Prior to the occupied season sanitize the entire domestic water piping system (cold and hot) with a solution containing not less than 50 ppm available chlorine. Keep solution in the system for a minimum of 24 hours, with each valve being operated several times during the period. After completion, flush system with clean domestic water until chlorine residual is lowered to typical water level.

46. At the start of the cold weather season, the existing domestic water piping distribution system should be drained of all remaining water and blown down with compressed air. The compressed air will insure that no water is trapped in the piping that could freeze. This will prevent the pipes from breaking due to freezing. Mineral oil should be added to the p-traps on all plumbing fixtures including the toilets. This will keep the traps primed and prevent sewer gases from entering the house. All fixtures should have signage attached indicating that they have been winterized and are not usable.

Electrical Systems

47. The existing electrical system should be visually inspected for damaged devices and branch circuit conductors. The branch circuits and the service entrance conductors should be megger tested to measure the insulation resistance in the conductors. A report should be supplied documenting the results of the test. Repairs should be made where necessary.

48. The light fixtures should be re-lamped as necessary and cleaned, taking care to remove all dirt and debris.
    - The LED retrofit light fixture in Bathroom 104 should be tested to make sure it is in proper working order, if not, replace with new.
    - Replace missing glass cover on the light fixture located in Bedroom 101.

49. The electrical grounding system should be inspected by a qualified, licensed electrician. A grounding electrode conductor should be installed on the metallic water service

entrance piping where it enters the house prior to any valves or unions in the piping system. All grounding should be in accordance with 2014 NEC Article 250. Verify that grounding connections from the electrical, and communications systems are interconnected.

50. Protection needs to be installed for all exposed NM cable located on the basement walls in accordance with NEC 334.15 (A) through (C), including the exposed branch circuit conductors coming out of the electrical panel.

51. All GFCI receptacles should be tested to verify they are in working order. Ground-fault circuit interrupter protection for personnel should be installed in accordance with NEC 210.8(A)(1) through (10).
    - All receptacles located in the basement should be replaced with GFCI receptacles or a GFCI circuit breaker protecting the receptacle.
    - The receptacles in Kitchen 105 on the south walls and above the counter on the east wall should be replaced with GFCI receptacles or if they are protected by a GFCI upstream they will need to be labeled.
    - The GFCI receptacle located on the west side of the building exterior should be inspected and replaced if the receptacle is not in accordance with NEC 406.9(B)(1).

52. A disconnecting means should be installed for both the electric water heater and basement wall heater located in Basement 001 if they are not already installed per NEC 422 part III.

53. Remove the unused Econotrol system in its entirety.

<u>Telephone System</u>

54. The telephone system should be inspected and tested by a qualified technician. The system should be placed in operation.

<u>Fire Alarm System</u>

55. The smoke detectors should be tested and batteries replaced if necessary. Replace faceplate on smoke detector located in Basement 001.

<u>Fire Protection System</u>

56. The existing hand activated fire extinguishers should be evaluated and tested by a fire alarm contractor on an annual basis. Immediate repairs should be made to insure the systems are operational. Corroded or otherwise damaged components should be replaced.

57. Install outside notification system for smoke detectors. Since the houses are fairly remote, an exterior audible alarm should be considered.

Insulation

58. Insulation –

Investigate extent of existing wall insulation. This will require either drilling small holes and investigating with a lighted boroscope or perhaps a very sensitive thermal imaging camera. The walls of HS-06 were last insulated during a 1952 contract to insulate the buildings in the historic housing area and the administration building. Fiberglass insulation was stuffed in walls and in the attic.

Install additional insulation, as required in walls and in attic.

It is recommended that the existing roof and wall insulation be evaluated and modified to meet the requirements set forth in Table C402.2 of the 2012 IECC.

2012 IECC TABLE C402.2 OPAQUE THERMAL ENVELOPE REQUIREMENTS

Climate Zone	**7**	
	All Other	**Group R**
Roofs		
Attic and other	R-49	R-49
Walls, Above Grade		
Wood framed	R-13 + R-7.5ci or R-20 + R-3.8ci	R-13 + R-7.5ci or R-20 + R-3.8ci
Walls, Below Grade		
Below-grade wall	R-7.5ci	R-10ci

ci = Continuous insulation
Refer to 2012 IECC for additional information.

Long Term Treatment and Maintenance Repair Recommendations

Long term maintenance and repair recommendations take into account items that do not required immediate or short term attention, but would be recommended for the long term use of the house.

Long Term Architectural and Structural Recommendations

A. Replace or retrofit existing bedroom replacement windows. The existing aluminum wood clad egress casement windows installed in the bedrooms are fine replacement windows; however, the detailing at the exterior is not a historically appropriate solution. The historic wood trim is panned and appears wider and the sills appear taller than the original historic windows. The detailing at the metal panning is not tidy and is installed so that the metal seams will shed water from the interior, only if the sealants are well maintained.
B. Replicate and install rustic board and batten shutters, per the historic drawings and photographs.
C. Remodel kitchen. Remove existing Celotex type tiles from the ceiling. Restore plaster or drywall ceiling.
D. Install new carpeting.
E. Painting throughout the house.
F. Replace vinyl tile flooring in hall. Inspect original wood flooring to see if it is able to be restored. Repair, replace and refinish, as required.
G. When it is time to replace the existing roof, consider the installation of the Decra metal roofing shingles to match the Administration Building. The existing 40 year asphalt roof was installed in 2002, so by the time the roof requires replacement, there may be even newer acceptable substitute products that will have the look of a historic wood shingle, with less maintenance and a longer life span. New roofs should be outfitted with integral fall protection clips. These are a safety feature that has very little effect on the overall look of the roofs.
H. When the roof is replaced, install new reproduction box gutters with rectangular downspouts to match the historic conditions.
I. Inspect the west side of the stone chimney for a cricket. If one exists, it is not apparent from grade. If one does not exist, consider installing a cricket during the next roofing project.
J. Refinish historic hardware, including re-plating chrome hardware in Bathroom 104 and restore the front Door 100/1 hardware.
K. Consider replacing existing white PVC downspout boots with dark cast iron to blend better with the surroundings.
L. Investigate perimeter of the interior of the basement foundation walls. They are currently covered with studs and wall board. These exterior stone walls need to be inspected for deterioration and cracking or settlement. This would be required in Room 001 and 002.

Long Term Mechanical/Plumbing/Electrical/Fire Protection Recommendations
The existing electric baseboard heating system is very costly to run during the winter months. Consider installing a high-efficiency forced air HVAC system. Options for this are listed below.

Modifications to the building will require coordination with the National Park Service and existing conditions to conceal as much of the MEP systems from view as possible.

HVAC Systems
If the existing HVAC system is to be replaced, heating and cooling load calculations should be performed per current ASHRAE standards and the new equipment should be sized accordingly. The following design criteria should be used:

Outdoor design temperature: The ASHRAE outside summer and winter design conditions for Custer County, SD should be used for design purposes.

Summer Outdoor Design Temperature: 83.7°F db (1.0%)/ 58.9°F wb (MCWB)
Winter Outdoor Design Temperature: -8.2°F db (99.6%)

Inside Temperatures: The following temperatures (Summer/Winter) should be used for Thermal Comfort Design.

Summer: 75°F DB/50% RH max
Winter: 70°F DB

Upon establishing the heating and cooling demands, a new HVAC system should be selected and sized to handle such demands.

Split System
A split system would consist of an electric resistance heating coil, high capacity blower, MERV 11 filters, and a direct expansion cooling coil. A matched condensing unit for each would be located outdoors. Locations for combustion air intakes and flues for the gas-fired furnaces should be carefully coordinated with the Architect and the National Park Service. A new ductwork system would need to be installed throughout the building. Programmable thermostat(s) should be installed for control of the respective split systems.

A heat pump condensing unit can be used in lieu of a standard condensing unit. An auxiliary electric resistance coil would also need to be provided. Multiple split systems can be installed throughout the building in order to meet the cooling and heating load demands.

One advantage to this system is that most service companies are familiar with this equipment and can provide service and timely repair. Another advantage is the lower first cost. Disadvantages of this system would be the requirement that ductwork be installed throughout the building. There will also be combustion air and flue openings in the building façade. Penetrations through the wall will also be required for piping and electrical conduit to the condensing units.
Geothermal Heat Pump
The geothermal heat pump system would consist of a water source heat pump and an accompanying geothermal well field. The heat pumps would contain MERV 11 filters. A new

ductwork system would need to be installed throughout the building. Programmable thermostat(s) should be installed for control of the respective systems.

A geothermal heat exchanger would be installed in the yard or parking area adjacent to the house. A sample bore and conductivity test is required to determine the ground conditions. The results of the test are required to design the depth and number of bores. A typical heat exchanger consists of a series of vertical pipe bores. Polyethylene piping is installed in the bores and is routed to a header. The header would preferably be located in the basement, but could be installed in a vault on site. Water or glycol would be pumped through the pipe to provide a seasonal heat source or sink for the heat pumps.

This geothermal system has several advantages over the split systems. It is considerably more efficient, and would result in lower operating costs. It would eliminate the need for exterior condensing units, which would improve the historic integrity of the site. The system will also be much quieter than a high efficiency furnace and condensing unit.

One disadvantage to this system is that the site will be disturbed. The drilling and site work would need to be carefully coordinated with the National Park Service to reduce the impact and ensure no archaeological artifacts are destroyed. Another disadvantage is that this system will have a higher first cost than the split systems.

A geothermal heat pump system would most likely not be feasible due to the potential disruption the geothermal wells could cause the cave system.

VRF System

A variable refrigerant flow (VRF) system would consist of a condensing unit located outside, individual VRF fan coil units located in each cooling zone, refrigerant piping, and branch selector boxes. The locations of the condensing unit and fan coil units will need to be carefully coordinated with the Architect and the National Park Service. Programmable thermostat(s) should be installed for each VRF fan coil. The VRF system can provide heating but a supplement electric heating system would probably also be required.

Advantages of the VRF system is that it can be configured as a ducted system or a ductless system. Disadvantages of this system would be that the fan coils may need to be exposed in the rooms they serve. Penetrations through the walls and floor will also be required for refrigerant piping and electrical conduit to the fan coils and condensing unit.

Ventilation

The recommendation is to install a separate, dedicated outside air unit in the attic to provide ventilation air. This unit would include an enthalpy heat recovery wheel, filters, heating, and cooling. The unit would include the same heating and cooling equipment that is selected for the main system (split system with furnace or water source geothermal heat pump). The unit would be used to supply ventilation air to all rooms in the building and would exhaust air from the restrooms. Energy recovered from the exhaust air stream would be used to pre-treat the fresh air. The design for the outside air intake and exhaust hood will require careful coordination with the Architect and the National Park Service to minimize impact on the building's historic integrity.

Plumbing
A double check valve or reduced pressure zone backflow should be added to the domestic water entry.

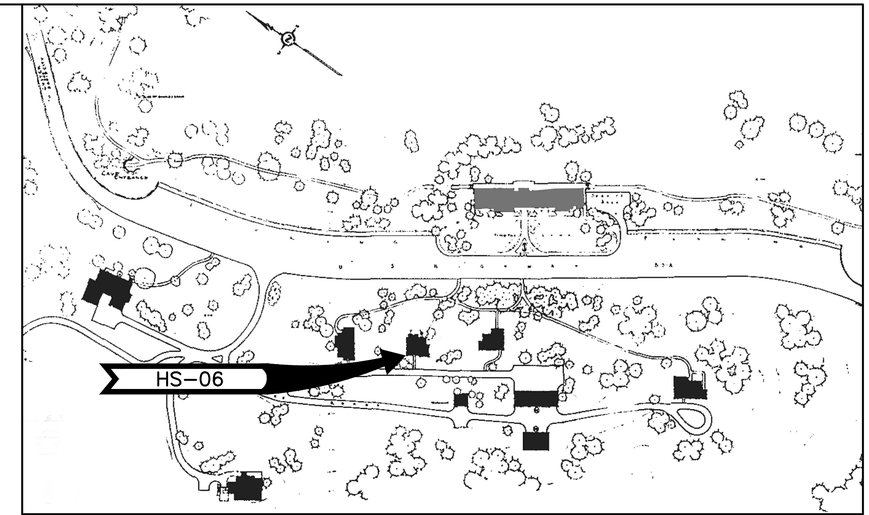
Electrical Systems
A code compliant electrical distribution system should be installed when the building is renovated. All circuit breakers serving loads in the dwelling unit shall be arc fault circuit interrupter (AFCI) circuit breakers per NEC 210.12 (A).

Fire Alarm Systems
Field verify whether the system is 120V hardwired and the devices are interconnected. If not, replace the smoke detectors with a code compliant system when the building is renovated.

HS–06 QUARTERS
HISTORIC STRUCTURES REPORT
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK

TREATMENT RECOMMENDATION DRAWINGS

HOT SPRINGS, SOUTH DAKOTA



HISTORIC HOUSING AREA, WIND CAVE NATIONAL PARK, HOT SPRINGS, SOUTH DAKOTA
(WIND CAVE NATIONAL PARK HISTORIC CONTEXTS AND NATIONAL REGISTER GUIDELINES REPORT, 1992)

HS–06 QUARTERS (SRJA 2014)

INDEX OF DRAWINGS

00 COVER

ARCHITECTURAL
TA0 BASEMENT/FOUNDATION FLOOR PLAN
TA1 FIRST FLOOR PLAN
TA2 ROOF PLAN
TA3 EAST ELEVATION AND SOUTH ELEVATION
TA4 WEST ELEVATION AND NORTH ELEVATION

STRUCTURAL
TS0 BASEMENT/FOUNDATION FLOOR PLAN
TS1 ATTIC FRAMING PLAN
TS2 STRUCTURAL DETAILS

	HISTORIC STRUCTURES REPORT	TITLE OF PROJECT TREATMENT RECOMMENDATION DRAWINGS HS–06 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK	DRAWING NO. 108 / 128872
	UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE DENVER SERVICE CENTER	REGION MIDWEST / COUNTY CUSTER / STATE SOUTH DAKOTA	PMIS/PKG NO. 158029
			SHEET 1 OF 9

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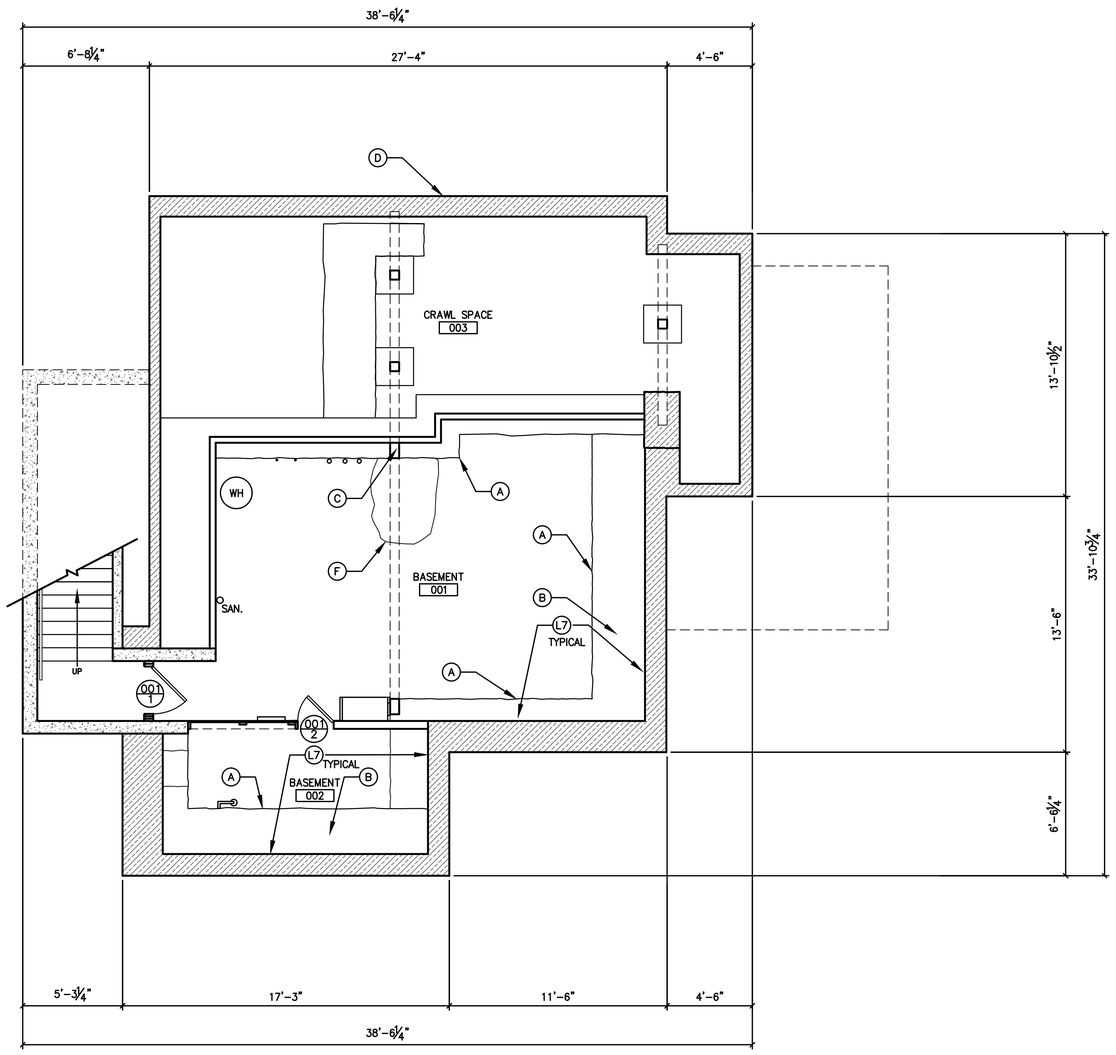

1 TA0 HS-06 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS – BASEMENT PLAN
1/4" = 1'-0"

4 0 4 8
SCALE OF FEET

GENERAL NOTES:

1. PERFORM HAZARDOUS MATERIALS TESTING BEFORE INITIATING ANY WORK.
2. INSPECT RADON MITIGATION SYSTEM AND UPDATE, AS REQUIRED.

KEY NOTES:

IMMEDIATE TREATMENT SCOPE OF WORK:

A. RE-POINT CRACKS IN BASEMENT WALLS, TYPICAL.
B. REPLACE CONCRETE CAPS AT BASEMENT WALLS, PER STRUCTURAL DRAWINGS.
C. REPAIR NORTH POST IN ROOM 001, RAISE FIRST FLOOR, PER STRUCTURAL DRAWINGS.
D. RECONNECT DRYER VENT.
E. REPLACE (5) RECEPTACLES IN BASEMENT WITH GFCI'S.
F. REMOVE DETERIORATED CONCRETE FLOOR PILLAR AND CLEAN WALL. INSTALL BONDING AGENT AND INSTALL FLOOR PATCH.
G. NOT SHOWN ON DRAWINGS. IN ATTIC, SISTER CEILING JOINTS AT NORTHEAST CORNER, PER STRUCTURAL RECOMMENDATIONS.
H. REMOVE PELLET STOVE AND ALL RELATED ACCESSORIES. PATCH AND REPAIR, AS REQUIRED.
I. EXHAUST STOVE RANGE HOOD THROUGH ROOF.
J. DISCHARGE BATHROOM 104 EXHAUST PLAN THROUGH ROOF.
K. REPLACE RECEPTACLES IN KITCHEN WITH GFCI'S (TYPICAL TWO LOCATIONS).
L. INSTALL NEW GALVANIZED PAINTED HANDRAIL.
M. RE-GRADE A PORTION OF THE NORTH AND WEST ELEVATIONS TO A MINIMUM OF 6" BELOW THE FINISH FLOOR. INSTALL SWALE AND FRENCH DRAIN TO DAYLIGHT. THIS WILL REQUIRE DEMOLITION AND RECONSTRUCTION OF THE CONCRETE LANDING AND STONE PATIO.
N. AT DOOR 100/3, RESTORE OR REPLACE STORM DOORS AND SIDELIGHTS. RESTORE AND REUSE HISTORIC HARDWARE. RESTORE HISTORIC INTERIOR FRENCH DOORS AND SIDELIGHTS. RESTORE HARDWARE. INSTALL TEMPERED GLASS.
O. INSTALL SOFT JOINT BETWEEN STONE PORCH AND STUCCO WALLS.
P. REPAIR PLASTER WALLS AND CEILING AS REQUIRED. PREP, PRIME AND PAINT.
Q. REMOVE DOORS 106/2.
R. REPOINT CRACK IN STONE PORCH.
S. CLEAN PORCH AND STEPS.
T. PAINT INTERIOR WINDOWS.
U. STAIN INTERIOR TRIM AND INSTALL MISSING TRIM.
V. REMOVE AND REINSTALL APRON ON THE RIGHT SIDE AT WINDOW 100.
W. INSTALL NEW HISTORICALLY APPROPRIATE ALUMINUM CLAD WOOD WINDOWS. RESTORE EXTERIOR WOOD TRIM. FINISH TO MATCH INTERIOR TRIM.
X. RESTORE DOOR 105/2 WITH A DUTCHMAN PATCH.
Y. PAINT FLOOR AND STEPS IN ROOM 106.
Z. PAINT WALLS AND CEILING IN ROOM 106.
AA. NOT SHOWN ON DRAWINGS. INSTALL ADDITIONAL ATTIC INSULATION.
AB. INVESTIGATE EXTERIOR WALLS FOR EXISTING INSULATION. INSTALL SUPPLEMENTAL INSULATION, AS REQUIRED.
AC. REPLACE MISSING GLOBE AT CEILING FAN.
AD. VERIFY DOORS 106/1 AND 104/1 CONTAIN TEMPERED GLAZING.
AE. REMOVE EXISTING UNUSED STOVE PIPE FLUE IN ITS ENTIRETY. PATCH ROOF AND PLASTER CEILING, AS REQUIRED.
AF. CLEAN, SPOT RE-POINT, REPAIR MORTAR WASH. IF CHIMNEY IS NOT TO BE USED TO EXHAUST RADON, INSTALL NEW PRE-FINISHED METAL FLUE CAP. INSPECT FLASHING.

LONG TERM TREATMENT SCOPE OF WORK:

GENERAL INTERIOR WORK:

L1. PAINTING THROUGHOUT ENTIRE INTERIOR OF THE HOUSE, TYPICAL.
L2. CONDUCT A HISTORIC HARDWARE SURVEY AND RESTORE ALL HARDWARE. RE-PLATE HARDWARE IN BATHROOM 104. RESTORE FRONT DOOR 100/1 HARDWARE.

SCOPE OF WORK:

L3. INSTALL NEW CARPETING.
L4. RENOVATE THE KITCHEN. IF A KITCHEN WHICH IS MORE PERIOD APPROPRIATE IS DESIRED, CONSULT WITH THE HISTORIC DRAWINGS FOR PRECEDENT CABINETRY DESIGN.
L5. REMOVE CELOTEX-TYPE TILE FROM THE KITCHEN CEILING RESTORE PLASTER OR INSTALL NEW DRYWALL CEILING AND PAINT.
L6. REMOVE EXISTING VINYL FLOORING IN HALL AND LAMINATE FLOORING IN LIVING ROOM AND REPAIR/RESTORE WOOD FLOORING.
L7. INVESTIGATE PERIMETER OF BASEMENT FOUNDATION WALLS. TEMPORARILY REMOVE COVERING FOR INSPECTION.
L8. WHEN THE EXISTING ROOF IS READY FOR REPLACEMENT, CONSIDER THE DECRA METAL REPLACEMENT ROOFING SYSTEM OR ONE OF THE OTHER RECOMMENDED REPLACEMENT ROOFS DISCUSSED IN THE TREATMENT RECOMMENDATIONS. REPLACE GUTTERS AND DOWNSPOUTS TO MATCH THE HISTORIC BOX GUTTERS.
L9. INSPECT WEST SIDE OF CHIMNEY. IF NO CRICKET EXISTS, INSTALL NEW CRICKET DURING NEXT RE-ROOFING PROJECT.

MECHANICAL/ELECTRICAL/PLUMBING WORK:

L10. CONSIDER INSTALLATION OF A HIGH-EFFICIENCY FORCED AIR HVAC SYSTEM, PER THE RECOMMENDATIONS.
L11. INSTALL A BACKFLOW PREVENTER ON THE DOMESTIC WATER ENTRY.
L12. BRING EXISTING ELECTRICAL DISTRIBUTION SYSTEM UP TO CODE, PER RECOMMENDATIONS.
L13. INSTALL AUDIBLE FIRE ALARM TO THE EXISTING SYSTEM.

DRAWING KEY:

MASONRY FOUNDATION WALLS

CONCRETE FOUNDATION WALLS

Susan Richards Johnson & Associates, Inc.
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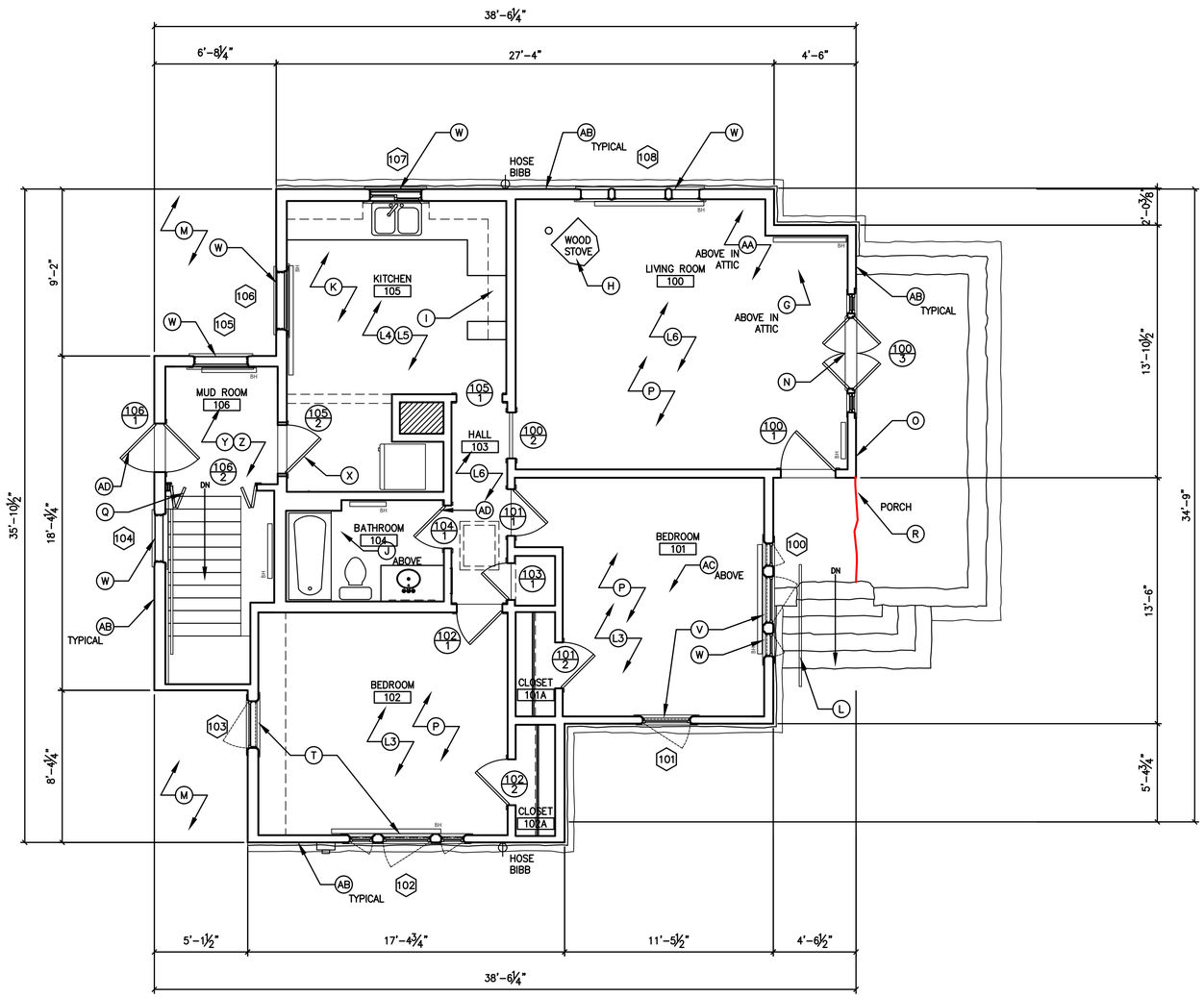
DESIGNED: AG
CADD: AG
TECH. REVIEW: AG
DATE: 1/27/16

SUB SHEET NO. TA0

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-06
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108 / 128872
PMIS/PKG NO. 158029
SHEET 2 OF 9



1 TA1 HS-06 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS – FIRST FLOOR PLAN
1/4" = 1'-0"

4 0 4 8
SCALE OF FEET

GENERAL NOTES:

1. PERFORM HAZARDOUS MATERIALS TESTING BEFORE INITIATING ANY WORK.
2. INSPECT RADON MITIGATION SYSTEM AND UPDATE, AS REQUIRED.

KEY NOTES:

IMMEDIATE TREATMENT SCOPE OF WORK:

A. RE-POINT CRACKS IN BASEMENT WALLS, TYPICAL.
B. REPLACE CONCRETE CAPS AT BASEMENT WALLS, PER STRUCTURAL DRAWINGS.
C. REPAIR NORTH POST IN ROOM 001, RAISE FIRST FLOOR, PER STRUCTURAL DRAWINGS.
D. RECONNECT DRYER VENT.
E. REPLACE (5) RECEPTACLES IN BASEMENT WITH GFCI'S.
F. REMOVE DETERIORATED CONCRETE FLOOR PILLAR AND CLEAN WALL. INSTALL BONDING AGENT AND INSTALL FLOOR PATCH.
G. NOT SHOWN ON DRAWINGS. IN ATTIC, SISTER CEILING JOINTS AT NORTHEAST CORNER, PER STRUCTURAL RECOMMENDATIONS.
H. REMOVE PELLET STOVE AND ALL RELATED ACCESSORIES. PATCH AND REPAIR, AS REQUIRED.
I. EXHAUST STOVE RANGE HOOD THROUGH ROOF.
J. DISCHARGE BATHROOM 104 EXHAUST PLAN THROUGH ROOF.
K. REPLACE RECEPTACLES IN KITCHEN WITH GFCI'S (TYPICAL TWO LOCATIONS).
L. INSTALL NEW GALVANIZED PAINTED HANDRAIL.
M. RE-GRADE A PORTION OF THE NORTH AND WEST ELEVATIONS TO A MINIMUM OF 6" BELOW THE FINISH FLOOR. INSTALL SWALE AND FRENCH DRAIN TO DAYLIGHT. THIS WILL REQUIRE DEMOLITION AND RECONSTRUCTION OF THE CONCRETE LANDING AND STONE PATIO.
N. AT DOOR 100/3, RESTORE OR REPLACE STORM DOORS AND SIDELIGHTS. RESTORE AND REUSE HISTORIC HARDWARE. RESTORE HISTORIC INTERIOR FRENCH DOORS AND SIDELIGHTS. RESTORE HARDWARE. INSTALL TEMPERED GLASS.
O. INSTALL SOFT JOINT BETWEEN STONE PORCH AND STUCCO WALLS.
P. REPAIR PLASTER WALLS AND CEILING AS REQUIRED. PREP, PRIME AND PAINT.
Q. REMOVE DOORS 106/2.
R. REPOINT CRACK IN STONE PORCH.
S. CLEAN PORCH AND STEPS.
T. PAINT INTERIOR WINDOWS.
U. STAIN INTERIOR TRIM AND INSTALL MISSING TRIM.
V. REMOVE AND REINSTALL APRON ON THE RIGHT SIDE AT WINDOW 100.
W. INSTALL NEW HISTORICALLY APPROPRIATE ALUMINUM CLAD WOOD WINDOWS. RESTORE EXTERIOR WOOD TRIM. FINISH TO MATCH INTERIOR TRIM.
X. RESTORE DOOR 105/2 WITH A DUTCHMAN PATCH.
Y. PAINT FLOOR AND STEPS IN ROOM 106.
Z. PAINT WALLS AND CEILING IN ROOM 106.
AA. NOT SHOWN ON DRAWINGS. INSTALL ADDITIONAL ATTIC INSULATION.
AB. INVESTIGATE EXTERIOR WALLS FOR EXISTING INSULATION. INSTALL SUPPLEMENTAL INSULATION, AS REQUIRED.
AC. REPLACE MISSING GLOBE AT CEILING FAN.
AD. VERIFY DOORS 106/1 AND 104/1 CONTAIN TEMPERED GLAZING.
AE. REMOVE EXISTING UNUSED STOVE PIPE FLUE IN ITS ENTIRETY. PATCH ROOF AND PLASTER CEILING, AS REQUIRED.
AF. CLEAN, SPOT RE-POINT, REPAIR MORTAR WASH. IF CHIMNEY IS NOT TO BE USED TO EXHAUST RADON, INSTALL NEW PRE-FINISHED METAL FLUE CAP. INSPECT FLASHING.

LONG TERM TREATMENT SCOPE OF WORK:

GENERAL INTERIOR WORK:

L1. PAINTING THROUGHOUT ENTIRE INTERIOR OF THE HOUSE, TYPICAL.
L2. CONDUCT A HISTORIC HARDWARE SURVEY AND RESTORE ALL HARDWARE. RE-PLATE HARDWARE IN BATHROOM 104. RESTORE FRONT DOOR 100/1 HARDWARE.

SCOPE OF WORK:

L3. INSTALL NEW CARPETING.
L4. RENOVATE THE KITCHEN. IF A KITCHEN WHICH IS MORE PERIOD APPROPRIATE IS DESIRED, CONSULT WITH THE HISTORIC DRAWINGS FOR PRECEDENT CABINETRY DESIGN.
L5. REMOVE CELOTEX-TYPE TILE FROM THE KITCHEN CEILING RESTORE PLASTER OR INSTALL NEW DRYWALL CEILING AND PAINT.
L6. REMOVE EXISTING VINYL FLOORING IN HALL AND LAMINATE FLOORING IN LIVING ROOM AND REPAIR/RESTORE WOOD FLOORING.
L7. INVESTIGATE PERIMETER OF BASEMENT FOUNDATION WALLS. TEMPORARILY REMOVE COVERING FOR INSPECTION.
L8. WHEN THE EXISTING ROOF IS READY FOR REPLACEMENT, CONSIDER THE DECRA METAL REPLACEMENT ROOFING SYSTEM OR ONE OF THE OTHER RECOMMENDED REPLACEMENT ROOFS DISCUSSED IN THE TREATMENT RECOMMENDATIONS. REPLACE GUTTERS AND DOWNSPOUTS TO MATCH THE HISTORIC BOX GUTTERS.
L9. INSPECT WEST SIDE OF CHIMNEY. IF NO CRICKET EXISTS, INSTALL NEW CRICKET DURING NEXT RE-ROOFING PROJECT.

MECHANICAL/ELECTRICAL/PLUMBING WORK:

L10. CONSIDER INSTALLATION OF A HIGH-EFFICIENCY FORCED AIR HVAC SYSTEM, PER THE RECOMMENDATIONS.
L11. INSTALL A BACKFLOW PREVENTER ON THE DOMESTIC WATER ENTRY.
L12. BRING EXISTING ELECTRICAL DISTRIBUTION SYSTEM UP TO CODE, PER RECOMMENDATIONS.
L13. INSTALL AUDIBLE FIRE ALARM TO THE EXISTING SYSTEM.

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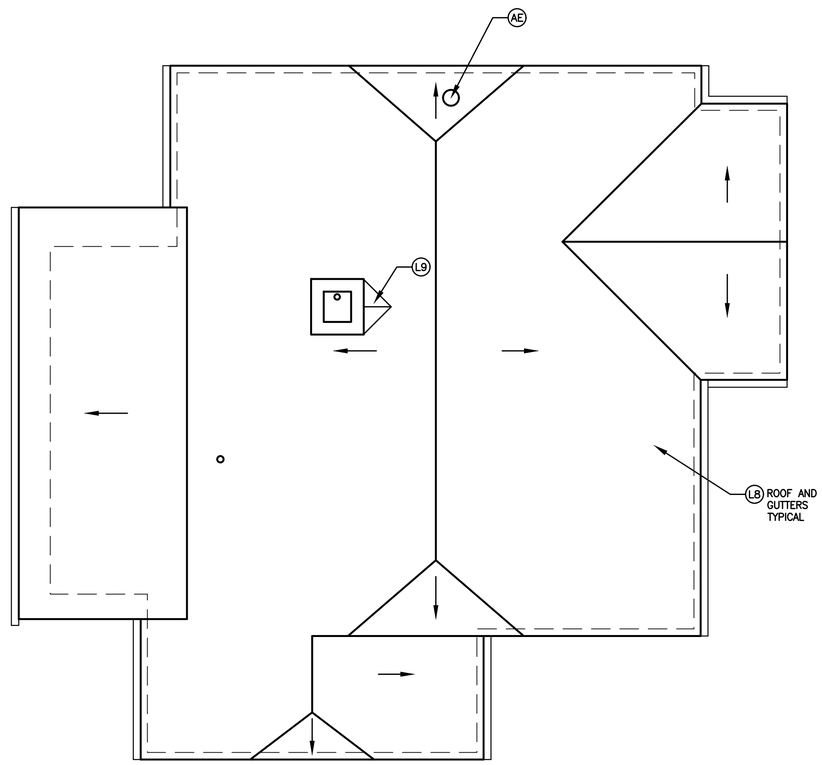
SUB SHEET NO. TA1

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-06
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108 / 128872
PMIS/PKG NO. 158029
SHEET 3 OF 9



1 / TA2 HS-06 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS – ROOF PLAN
1/4" = 1'-0"

4 0 4 8
SCALE OF FEET

GENERAL NOTES:

1. PERFORM HAZARDOUS MATERIALS TESTING BEFORE INITIATING ANY WORK.
2. INSPECT RADON MITIGATION SYSTEM AND UPDATE, AS REQUIRED.

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S. CLEAN PORCH AND STEPS.
T. PAINT INTERIOR WINDOWS.
U. STAIN INTERIOR TRIM AND INSTALL MISSING TRIM.
V. REMOVE AND REINSTALL APRON ON THE RIGHT SIDE AT WINDOW 100.
W. INSTALL NEW HISTORICALLY APPROPRIATE ALUMINUM CLAD WOOD WINDOWS. RESTORE EXTERIOR WOOD TRIM. FINISH TO MATCH INTERIOR TRIM.
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AF. CLEAN, SPOT RE-POINT, REPAIR MORTAR WASH. IF CHIMNEY IS NOT TO BE USED TO EXHAUST RADON, INSTALL NEW PRE-FINISHED METAL FLUE CAP. INSPECT FLASHING.

LONG TERM TREATMENT SCOPE OF WORK:

GENERAL INTERIOR WORK:

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SCOPE OF WORK:

L3. INSTALL NEW CARPETING.
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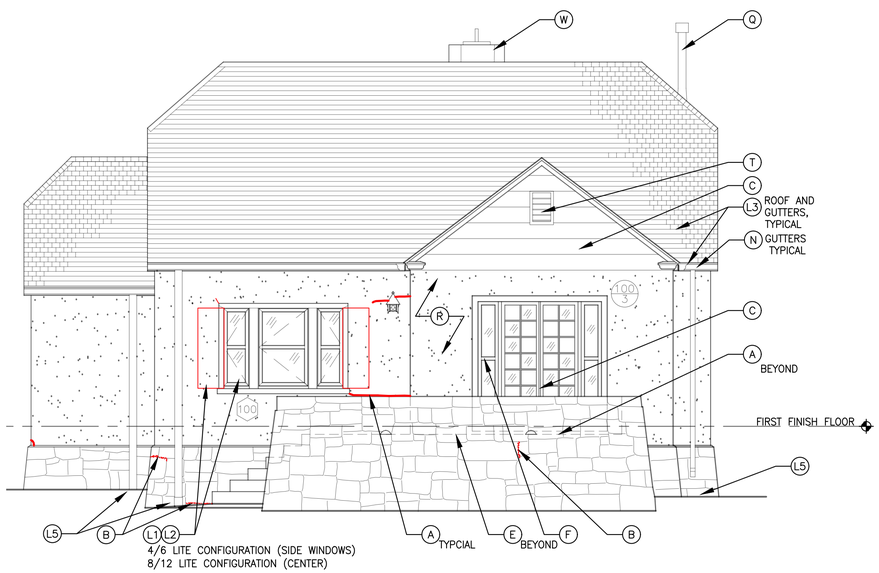
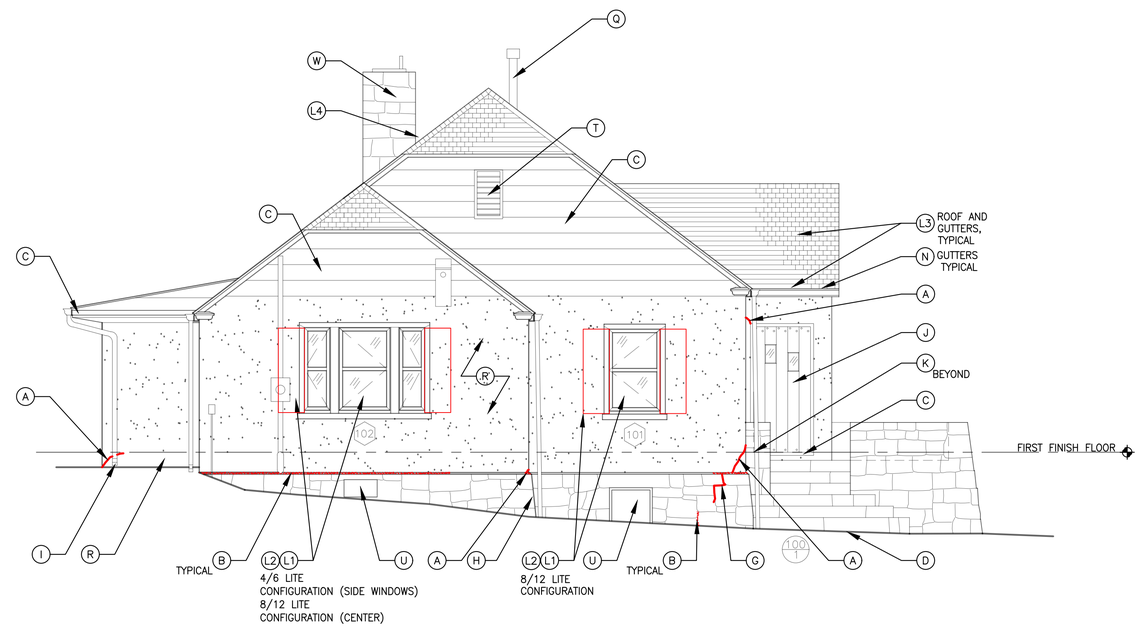
SUB SHEET NO. TA2

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-06
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108
128872
PMIS/PKG NO. 158029
SHEET 4 OF 9



1 TA3 HS-06 IMMEDIATE AND LONG TERM TREATMENT – EAST ELEVATION
1/4" = 1'-0"



2 TA3 HS-06 IMMEDIATE AND LONG TERM TREATMENT – SOUTH ELEVATION
1/4" = 1'-0"

GENERAL NOTES:

1. SPOT REPOINT AS REQUIRED. NEW MORTAR SHOULD MATCH EXISTING IN COMPOSITION, COLOR, TEXTURE AND PROFILE.
2. CLEAN ALL STONE TO REMOVE DIRT AND BIOLOGICAL GROWTH.

KEY NOTES:

IMMEDIATE TREATMENT SCOPE OF WORK:

A. PATCH AND REPAIR CRACK IN STUCCO.
B. REPOINT EXISTING MORTAR JOINTS.
C. PREP, PRIME AND REPAINT.
D. DEMOLISH EXISTING FRONT STONE LANDING. INSTALL NEW CONCRETE BASE AND RE-SET EXISTING STONES IN MORTAR TO MATCH EXISTING.
E. INSTALL SOFT JOINT BETWEEN FLAGSTONE PAVERS AND STUCCO WALL FINISH.
F. REPAIR DETERIORATED STORM WINDOW FRAME.
G. PATCH AND REPAIR CRACK IN MORTAR JOINT.
H. RE-SECURE STONE IN PLACE. REPOINT AS REQUIRED.
I. REATTACH DISCONNECTED DOWNSPOUT EXTENSION TO DOWNSPOUT.
J. REMOVE EXISTING SCREEN IN THE STORM DOOR AND INSTALL NEW SCREEN.
K. PATCH AND REPAIR HOLE IN STUCCO.
L. INSTALL NEW GLASS GLOBE ON LIGHT FIXTURE.
M. REPAIR CRAZING STUCCO.
N. INSTALL GUTTER COVERS.
O. INSTALL AN EXTENSION ON THE DOWNSPOUT.
P. LOWER FINISH GRADE.
Q. REMOVE EXISTING UNUSED FLUE PIPE IN ITS ENTIRETY. PATCH ROOF AND PLASTER CEILING, AS REQUIRED.
R. REPAINT 100% STUCCO WALLS.
S. REPAIR SCREEN AT DOOR 106/1.
T. INSPECT LOUVERS. REPAIR/INSTALL SCREENS, AS REQUIRED.
U. REHABILITATE/REPLACE FOUNDATION VENTS, AS REQUIRED.
V. REMOVE EXISTING WINDOW SASHES. INSTALL NEW REPLICA DIVIDED LITE ALUMINUM CLAD WOOD DOUBLE-HUNG WINDOW. RESTORE WOOD TRIM AND SILL. STAIN INTERIOR TO MATCH HISTORIC TRIM.
W. CLEAN, SPOT RE-POINT, REPAIR MORTAR WASH. IF CHIMNEY IS NOT TO BE USED TO EXHAUST RADON, INSTALL NEW PRE-FINISHED METAL FLUE CAP. INSPECT FLASHING.

LONG TERM TREATMENT SCOPE OF WORK:

L1. EXISTING EXTERIOR REPLACEMENT TRIM PANNING AT REPLACEMENT WINDOWS IS TOO WIDE AND DOES NOT MATCH THE HISTORIC CONDITION. EXISTING WINDOW SASH AND LITE CONFIGURATION DOES NOT MATCH THE HISTORIC WINDOWS. INSTALL NEW METAL CLAD WOOD WINDOW TO MEET EGRESS REQUIREMENTS. NEW WINDOW TO MATCH THE ORIGINAL WINDOW, INCLUDING ROUGH OPENING, SASH AND DIVIDED LITE CONFIGURATION.
L2. INSTALL REPRODUCTION WOOD SHUTTERS TO MATCH THE ORIGINAL HISTORIC SHUTTERS.
L3. WHEN THE EXISTING ROOF IS READY FOR REPLACEMENT, CONSIDER THE DECRA METAL REPLACEMENT ROOFING SYSTEM OR ONE OF THE OTHER RECOMMENDED REPLACEMENT ROOFS DISCUSSED IN THE TREATMENT RECOMMENDATIONS. REPLACE GUTTERS AND DOWNSPOUTS TO MATCH THE HISTORIC BOX GUTTERS.
L4. INSPECT WEST SIDE OF CHIMNEY. IF NO CRICKET EXISTS, INSTALL NEW CRICKET DURING NEXT RE-ROOFING PROJECT.
L5. REPLACE EXISTING WHITE PVC DOWNSPOUT BOOT WITH DARK CAST IRON TO BLEND BETTER WITH THE SURROUNDINGS.

4 0 4 8
SCALE OF FEET

Susan Richards Johnson & Associates, Inc.
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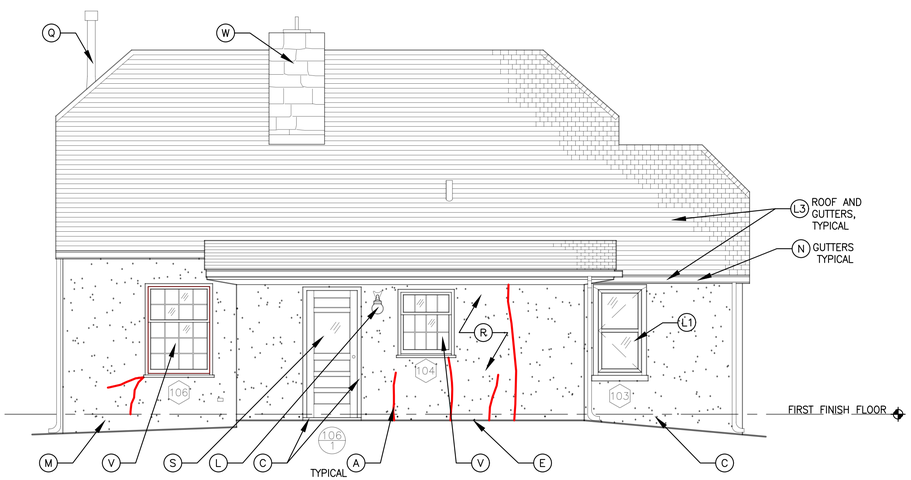
DESIGNED: AG
CADD AG
TECH. REVIEW: AG
DATE: 1/27/16

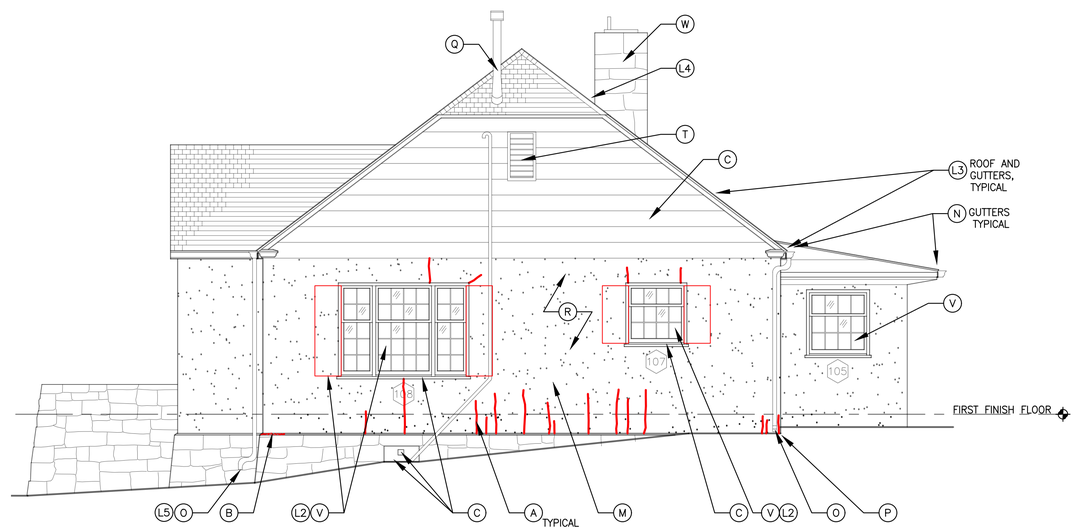
SUB SHEET NO. TA3

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-06
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108 128872
PMIS/PKG NO. 158029
SHEET 5 OF 9



1 TA4 HS–06 IMMEDIATE AND LONG TERM TREATMENT – WEST ELEVATION
1/4" = 1'–0"



2 TA4 HS–06 IMMEDIATE AND LONG TERM TREATMENT – NORTH ELEVATION
1/4" = 1'–0"

GENERAL NOTES:

1. SPOT REPOINT AS REQUIRED. NEW MORTAR SHOULD MATCH EXISTING IN COMPOSITION, COLOR, TEXTURE AND PROFILE.
2. CLEAN ALL STONE TO REMOVE DIRT AND BIOLOGICAL GROWTH.

KEY NOTES:

IMMEDIATE TREATMENT SCOPE OF WORK:

A. PATCH AND REPAIR CRACK IN STUCCO.
B. REPOINT EXISTING MORTAR JOINTS.
C. PREP, PRIME AND REPAINT.
D. DEMOLISH EXISTING FRONT STONE LANDING. INSTALL NEW CONCRETE BASE AND RE–SET EXISTING STONES IN MORTAR TO MATCH EXISTING.
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O. INSTALL AN EXTENSION ON THE DOWNSPOUT.
P. LOWER FINISH GRADE.
Q. REMOVE EXISTING UNUSED FLUE PIPE IN ITS ENTIRETY. PATCH ROOF AND PLASTER CEILING, AS REQUIRED.
R. REPAINT 100% STUCCO WALLS.
S. REPAIR SCREEN AT DOOR 106/1.
T. INSPECT LOUVERS. REPAIR/INSTALL SCREENS, AS REQUIRED.
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4 0 4 8
SCALE OF FEET

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SUB SHEET NO. TA4

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HS–06
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108
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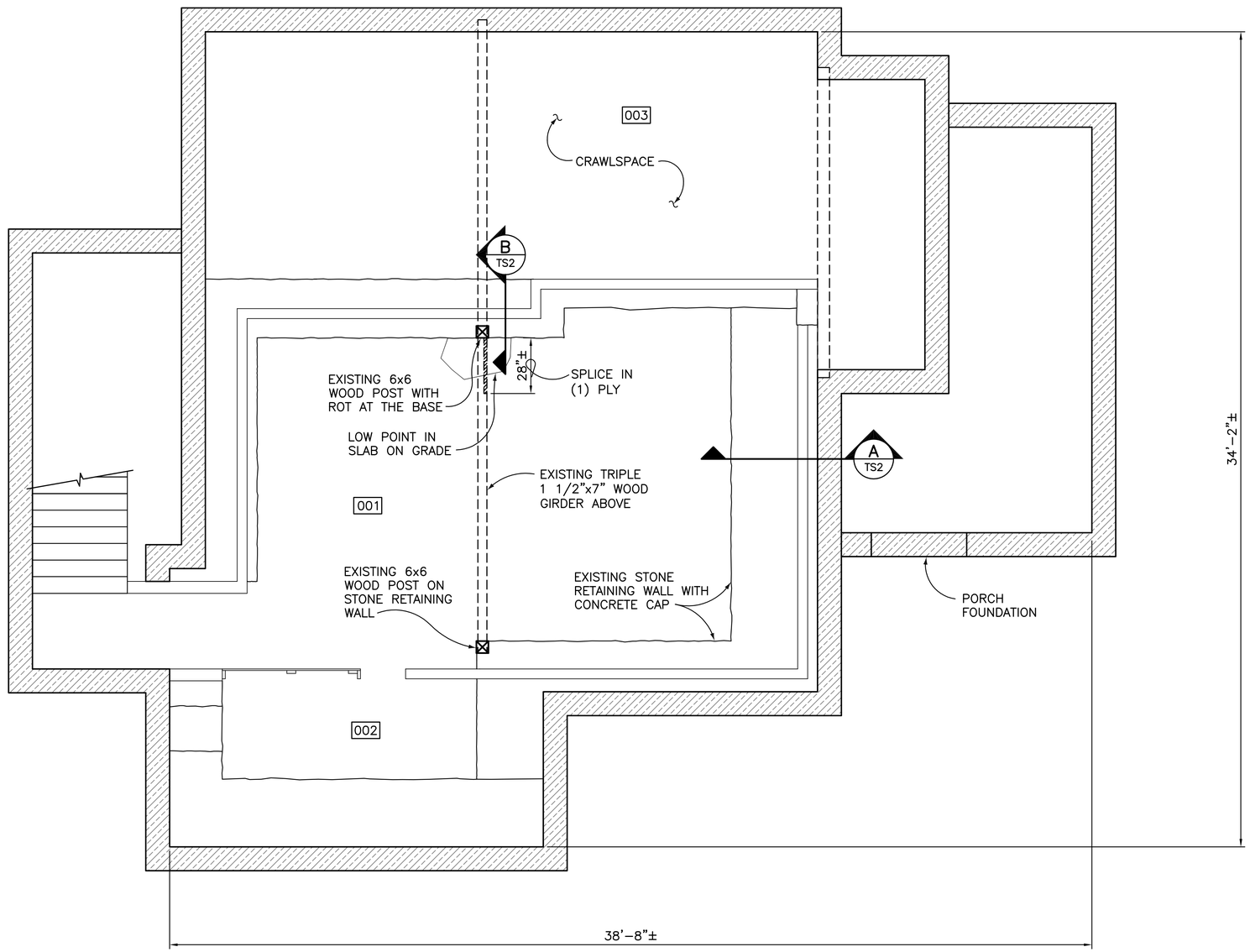
PMIS/PKG NO. 158029
SHEET 6 OF 9



LEGEND

EXISTING STONE FOUNDATION

1 TS0 BASEMENT FOUNDATION PLAN

3/8"=1'-0"

2 0 2 4 6

SCALE OF FEET

STRUCTURAL ENGINEERING ASSOCIATES, INC.

1000 WALNUT
SUITE 1570 KANSAS CITY, MO 64106
Ph. 816-421-1042
Fax 816-421-1061

DESIGNED: RCJ

CADD LEF

TECH. REVIEW:

DATE: 1/27/16

SUB SHEET NO. TS0

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HS-06
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WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108 128872

PMIS/PKG NO. 158029

SHEET 7 OF 9

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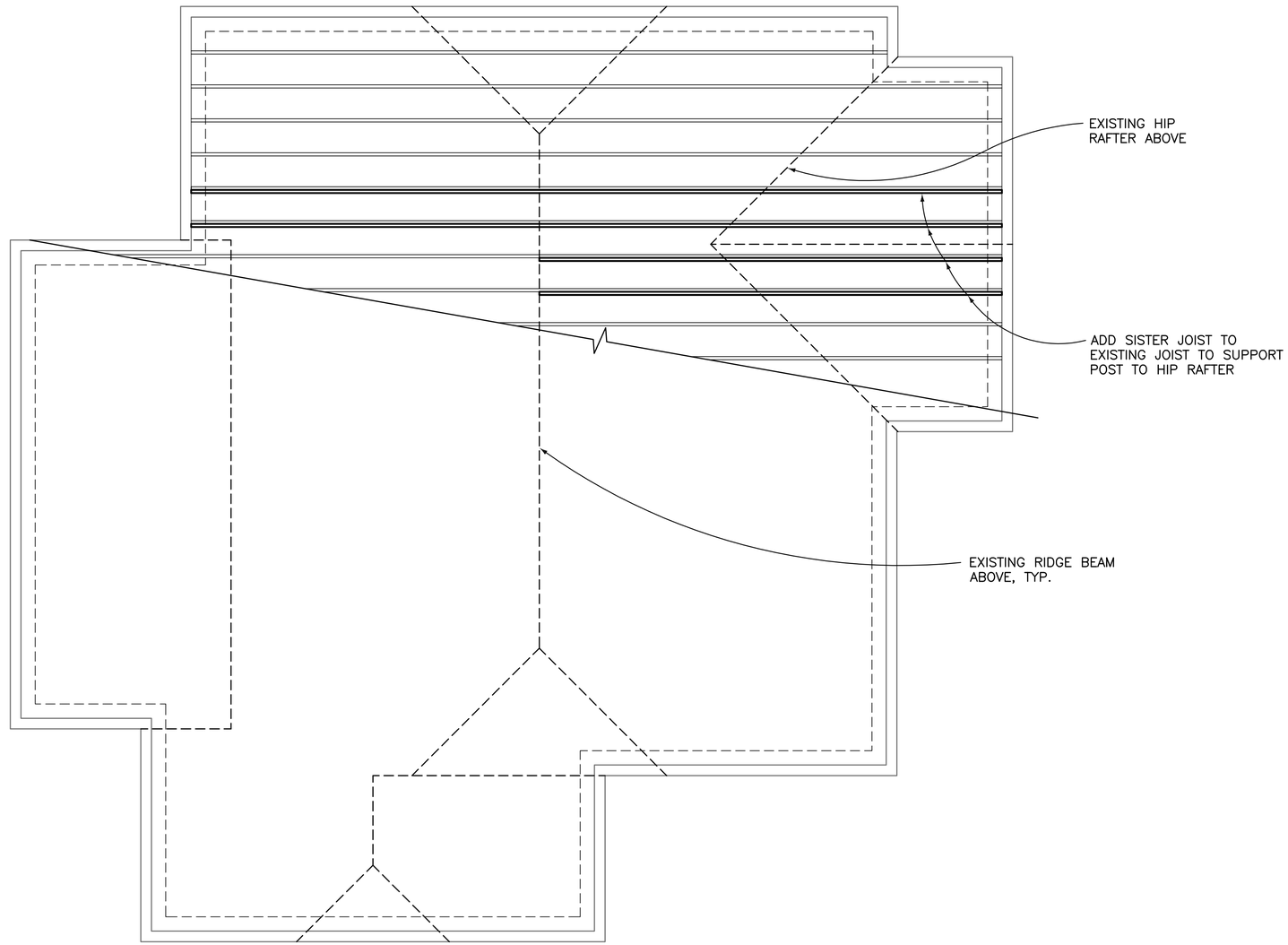

1 / TS1 ATTIC FRAMING PLAN
3/8"=1'-0"

2 0 2 4 6
SCALE OF FEET

STRUCTURAL ENGINEERING ASSOCIATES, INC.
1000 WALNUT
SUITE 1570 KANSAS CITY, MO 64106
Ph. 816-421-1042
Fax 816-421-1061

DESIGNED: RCJ
DRAWN: LEF
TECH. REVIEW:
DATE: 1/27/16

SUB SHEET NO. TS1

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HS-06
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WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

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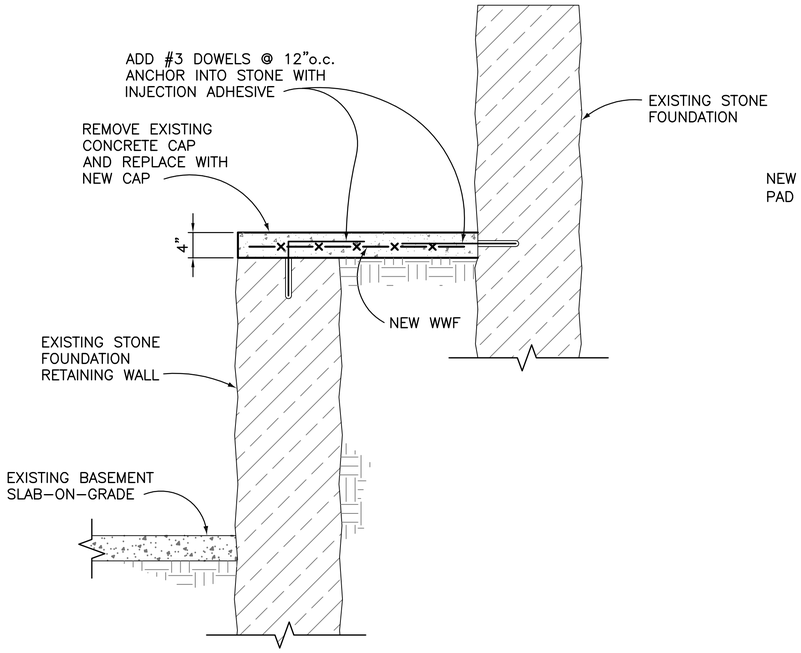
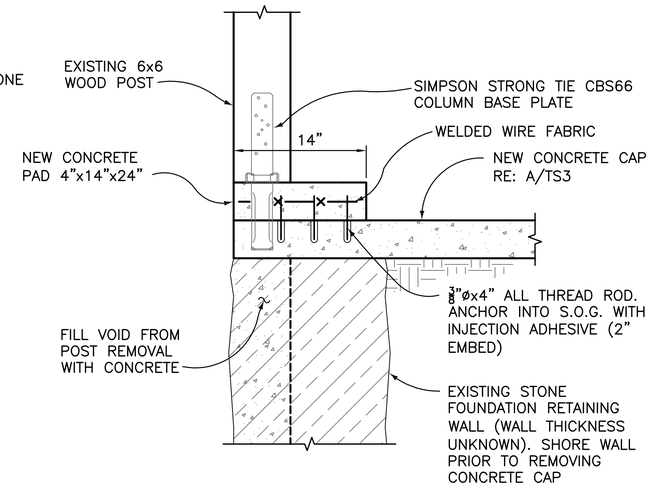
128872
PMIS/PKG NO. 158029
SHEET 8 OF 9

3/30/15 08:52 LFRISBIE R19 G:\2014147\DRAWINGS\02 TREATMENT DRAWINGS\XX- WIND CAVE- SECOND SHT.DWG



A TS2 CONCRETE CAP REPLACEMENT AT RETAINING WALL

1" = 1'-0"



B TS2 WOOD POST BEARING PAD

1 1/2" = 1'-0"

STRUCTURAL ENGINEERING ASSOCIATES, INC.
1000 WALNUT
SUITE 1570 KANSAS CITY, MO 64106
Ph. 816-421-1042
Fax 816-421-1061

DESIGNED: RCJ
CADD LEF
TECH. REVIEW:
DATE: 1/27/16

SUB SHEET NO. TS2

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-06
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO. 108
128872
PMIS/PKG NO. 158029
SHEET 9 OF 9

3/30/15 08:52 LFRISBIE R19 G:\2014147\DRAWINGS\02 TREATMENT DRAWINGS\XX- WIND CAVE- SECOND SHT.DWG

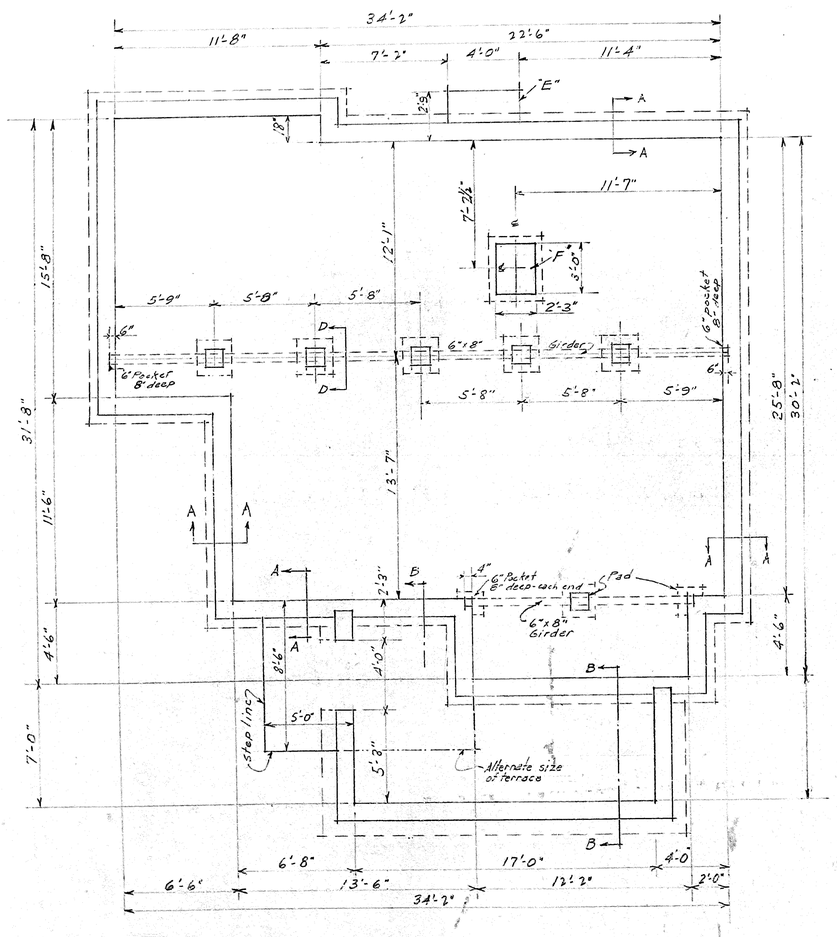
HS-06 ca. 1950s. (WICA Museum Collection #WICA 6364)

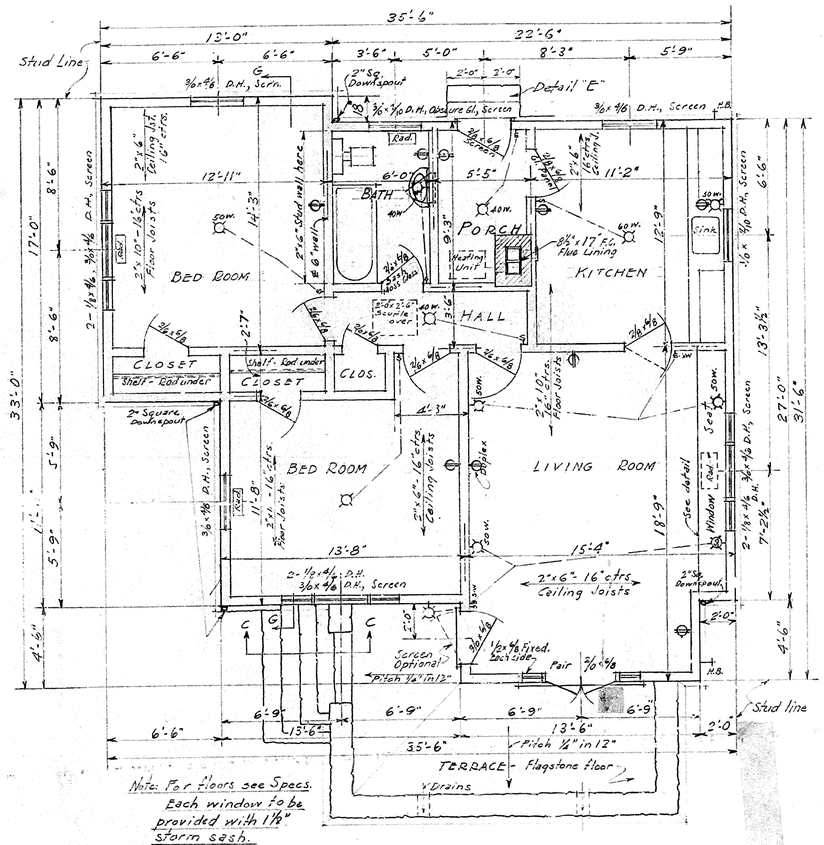
Appendix A
Historic Drawings

Appendix A

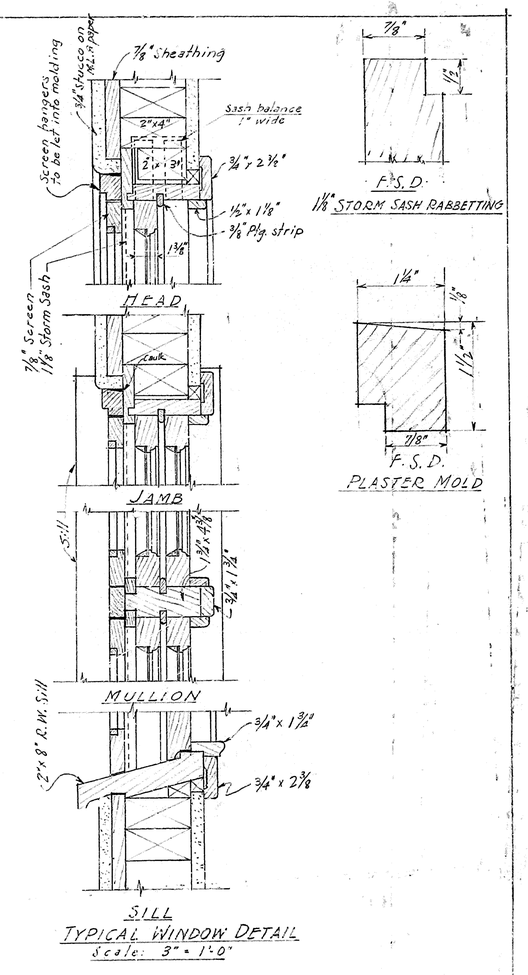
HS-06 Plan Pages

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	**File Name**	**Building Number**	**Drawing Title**	**Issuing Office at US Dept of Int.**	**Drawn by**	**Drawing Date**	**Sheet # of #**	**Public Works Project No.**	**Recommended by and title**	**Recommended Date**	**Approved by and title**	**Approval Date**	**Job Completed Date**	**Notes**
2	WICA_108_3004A_[id278447]	**HS 06**	Employee's Residence	Branch of Plans and Design	R.W A.	10/10/1933	1 of 4	PWP #1, Physical Improvements	W.G. Carnes, Chief Architect	10/12/1933	Arno B Cammerer/ Director	11/28/1933	8/11/1934	Floor Plans and window detail
3	WICA_108_3004A_[id278447]	**HS 06**	Employee's Residence	Branch of Plans and Design	R.W A.	10/10/1933	2 of 4	PWP #1, Physical Improvements	W.G. Carnes, Chief Architect	10/12/1933	Arno B Cammerer/ Director	11/28/1933	8/11/1934	Elevations, one section and roof truss framing detail
4	WICA_108_3004A_[id278447]	**HS 06**	Employee's Residence	Branch of Plans and Design	R.W A.	10/10/1933	3 of 4	PWP #1, Physical Improvements	W.G. Carnes, Chief Architect	10/12/1933	Arno B Cammerer/ Director	11/28/1933	8/11/1934	Sections and detail of Porch, doors, built-ins and kitchen
5	WICA_108_3004A_[id278447]	**HS 06**	Employee's Residence	Branch of Plans and Design	R.W A.	10/10/1933	4 of 4	PWP #1, Physical Improvements	W.G. Carnes, Chief Architect	10/12/1933	Arno B Cammerer/ Director	11/28/1933	8/11/1934	Foundation plan, simple floor plan, piping system
6	WICA_108_3018_[id3227]	**HS 06**	Planting for Residence No. W.C. 3004 A	Branch of Plans and Design, NPS	S.S.	10/15/1934	1 of 1	4	W.G. Carnes, Act. Chief Architect	10/23/1934	Arno B Cammerer/ Director NPS	11/15/1934		Site Plan with plantings and legend. SS may refer to S.Serrano (see monthly Supt. Reports, 1937)





Note: For floors see Specs.
Each window to be provided with 1⅛" storm sash.



HALF-SIZE REPRODUCTION

Public Works Project No. 1, Physical Improvements

Quarters No. 6

Recommended	Supervising Architect	Date 10-12-33
Cleared for Eng.	Chief Engineer	Date 10-19-33
Concurred	Fire Protection Expert	Date 11-24-33
Concurred	Supervising Engineer	Date 10-25-33
Approved	Director	Date 11-28-33

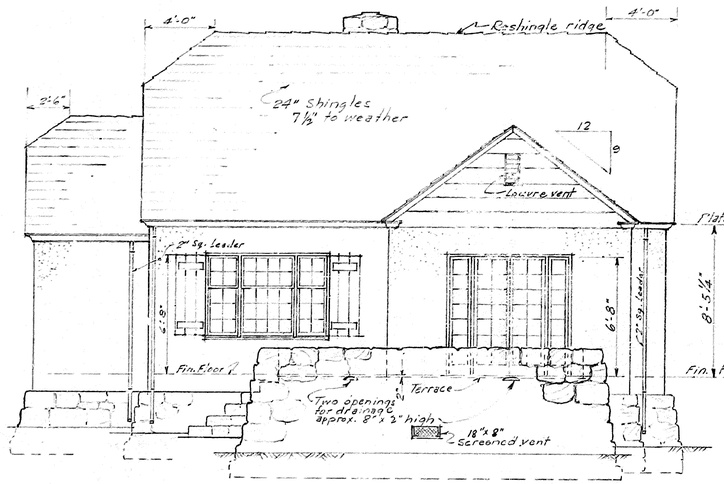
U.S. DEPARTMENT OF INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS AND RESERVATIONS
WIND CAVE NATIONAL PARK
EMPLOYEE'S RESIDENCE
DRAWN BY BRANCH OF PLANS AND DESIGN

Date 10-10-'33
Sheet No. 1 of 4 Sheets
Drawing No. WC-3004A

Job completed 5-11-34 P. Wilson

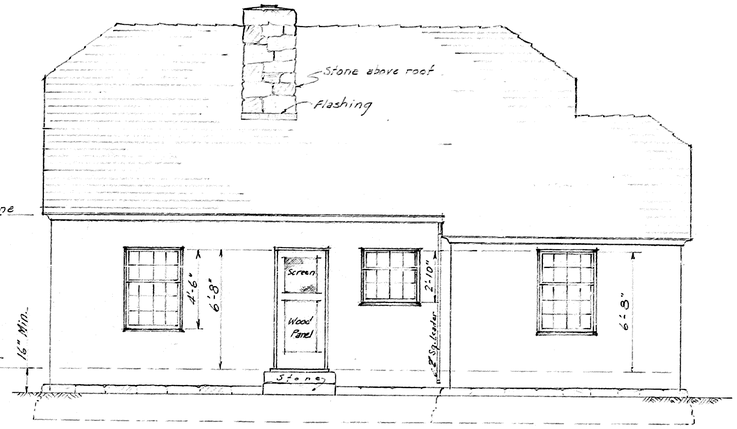
Checked by: Landscape A.K.C. | Structural A.K.C. | Specifications
Drawn by: Architectural A.K.C.

WICA_108_3004A_[id278447] HS-06

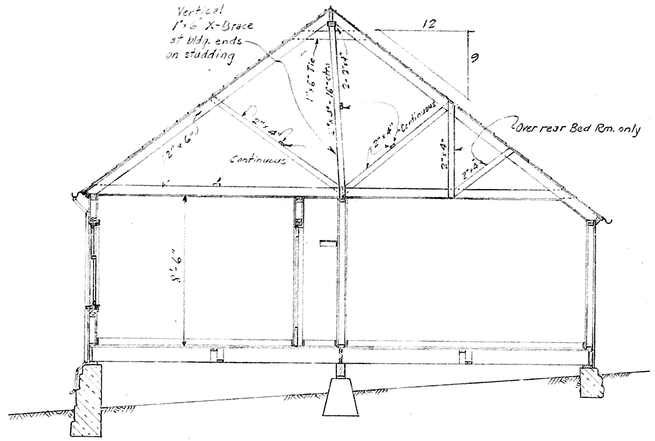


EAST (FRONT) ELEV.

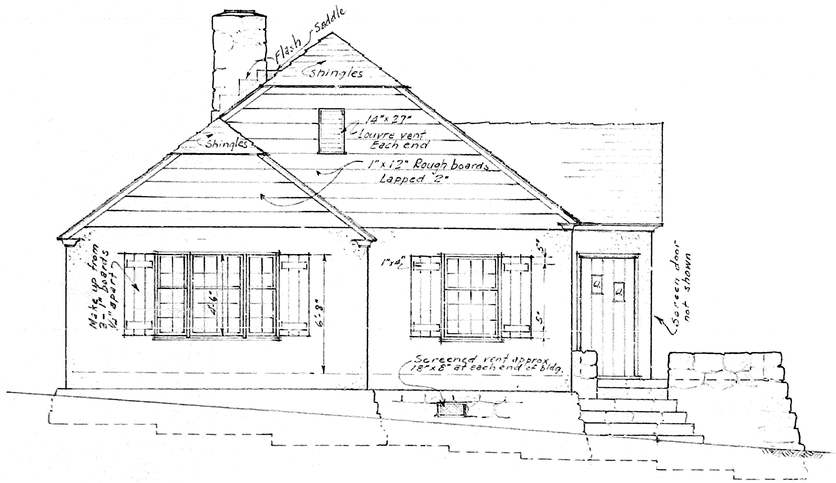
Scale: ¼" = 1'-0"



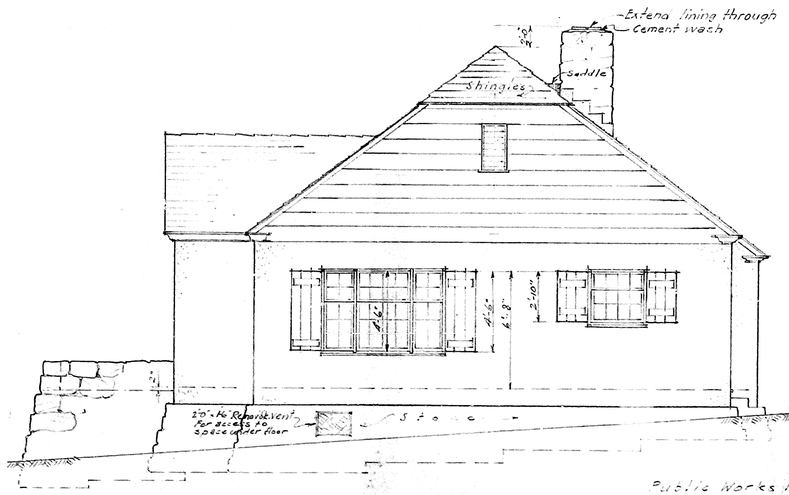
WEST (REAR) ELEV.



SECTION "G-G"

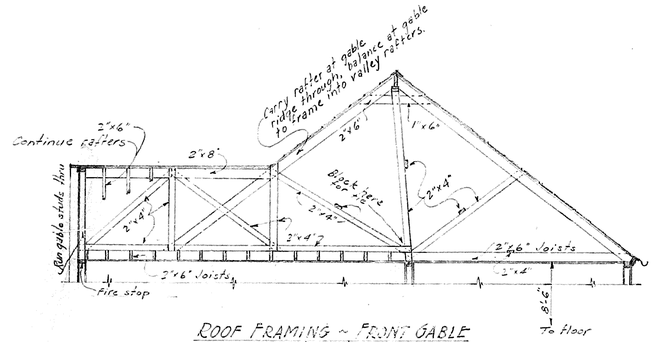


SOUTH ELEVATION



NORTH ELEVATION

Scale: ¼" = 1'-0"



ROOF FRAMING ~ FRONT GABLE

Scale: ½" = 1'-0"

Dr. by BWA
Tr. by BWA

Checked by

Architectural A.C.	Landscape	Structural A.C.	Specifications

Public Works Project No. 1 . Physical Improvements

Recommended	W. G. Carter, Actg. Chief Architect	Date 10-22-33
Cleared for Eng.	Chief Engineer	Date 10-19-33
Concurred	Eng. Support Expert	Date 11-24-33
Concurred	Supervising Architect	Date 10-26-33
Approved	Director	Date

U.S. DEPARTMENT OF INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS & RESERVATIONS

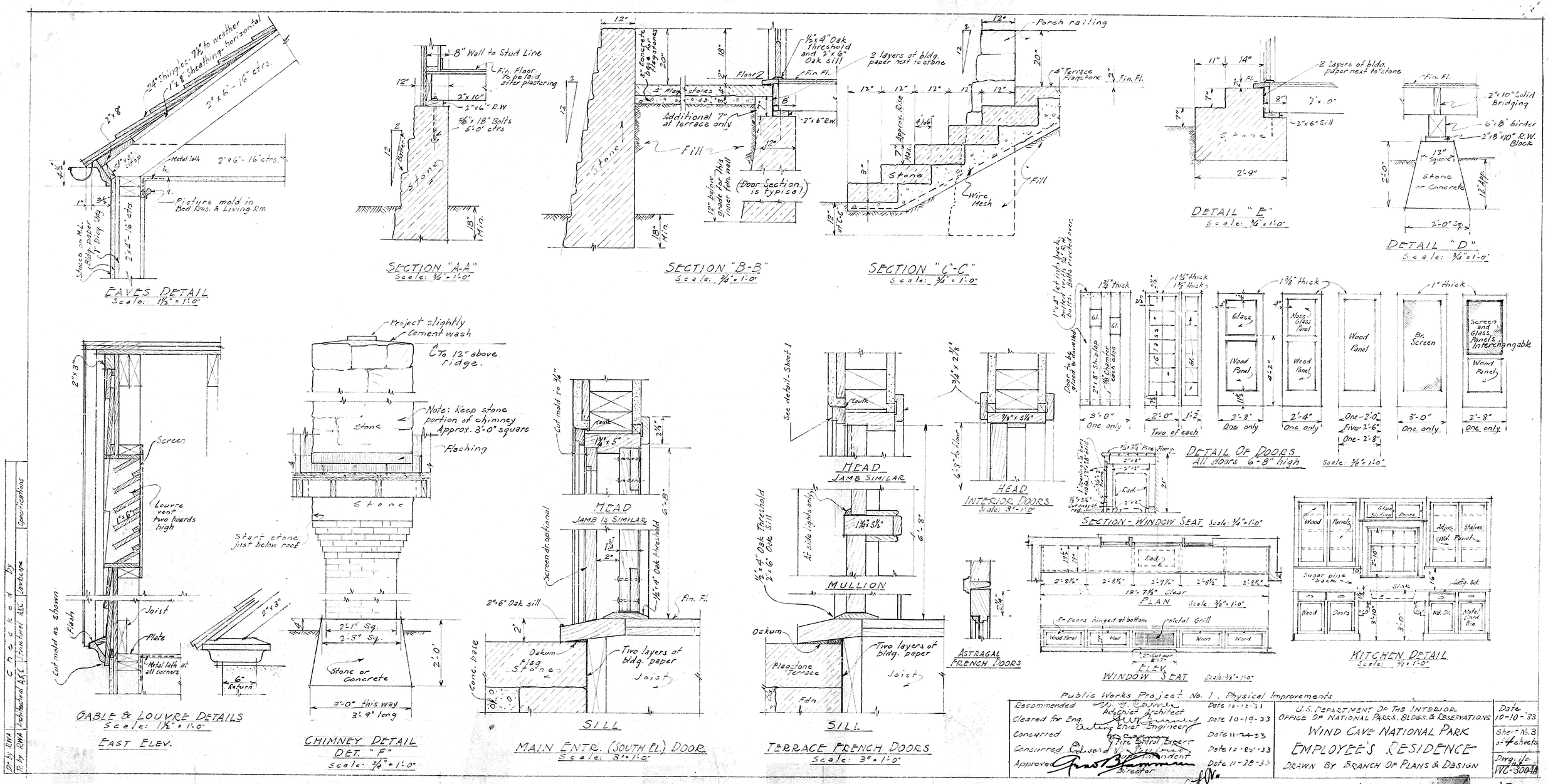
WIND CAVE NATIONAL PARK
EMPLOYEE'S RESIDENCE

DRAWN BY BRANCH OF PLANS AND DESIGN

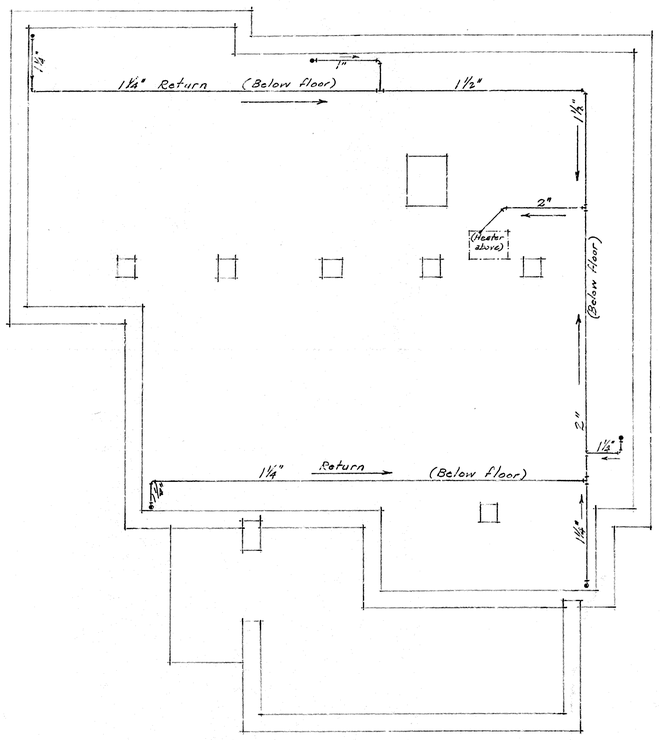
Date 10-10-'33
Sheet No. 2 of 4 Sheets
Dwg. No. W.C. 3004-A

Job completed 8-11-34 Project 1

WICA_108_3004A_[id278447] HS-06

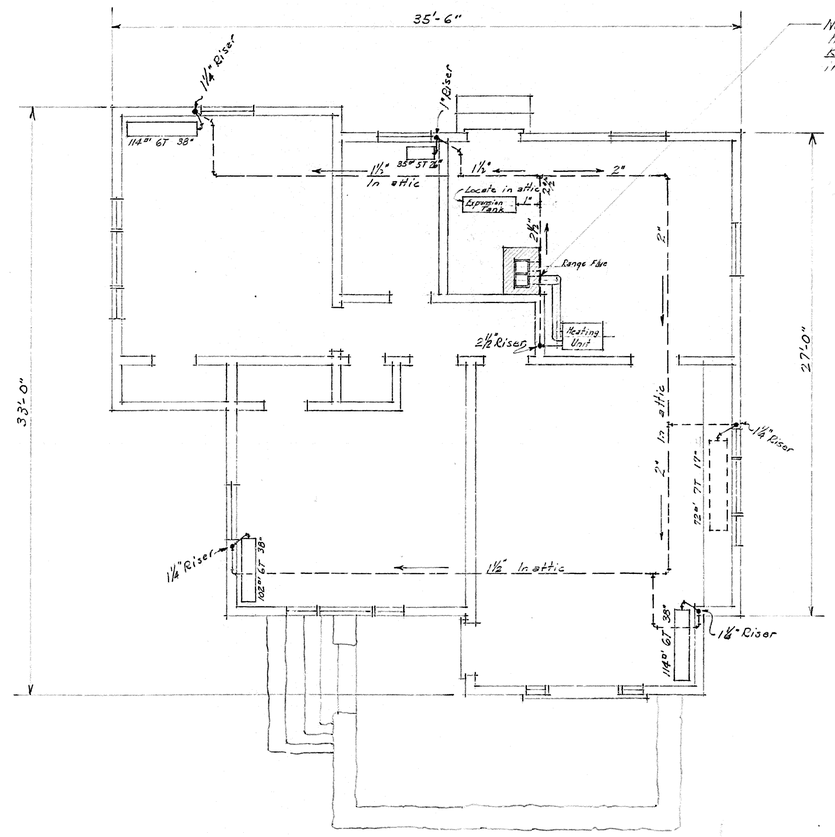


WICA_108_3004A_[id278447] **HS-06**



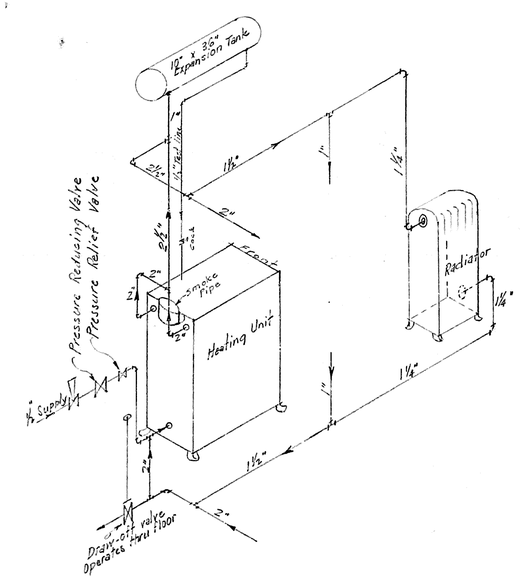
FOUNDATION PLAN

Scale: ¼" = 1'-0"



Note – Thimble to chimney for heating unit comes thru into Kitchen, instead of Porch as indicated on Bldg. plans.

FLOOR PLAN



PIPING DIAGRAM
No Scale

Dwg. No.	Title	Date	By
WC-3004A	Architectural Plan	10-1-33	
	Spec.		

Public Works Project No. 1, Phys. Imprvts.

Recommended	W. J. Carrillo, Acting Chief Architect	Date 11-15-33
Cleared for Eng.	R. L. Sherwood, Acting Chief Engineer	Date 11-16-33
Concurred	J. D. Coffman, by F.L.A., Fire Control Expert	Date 1-5-34
Concurred	Edward [illegible], Superintendent	Date 11-25-33
Approved	[illegible], Director	Date 1-6-34

– SUPPLEMENTARY SHEET –

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BLDGS. & OBSERVATIONS
WIND CAVE NATIONAL PARK
HEATING PLAN FOR EMPLOYEE'S RESIDENCE
DRAWN BY BRANCH OF PLANS & DESIGN

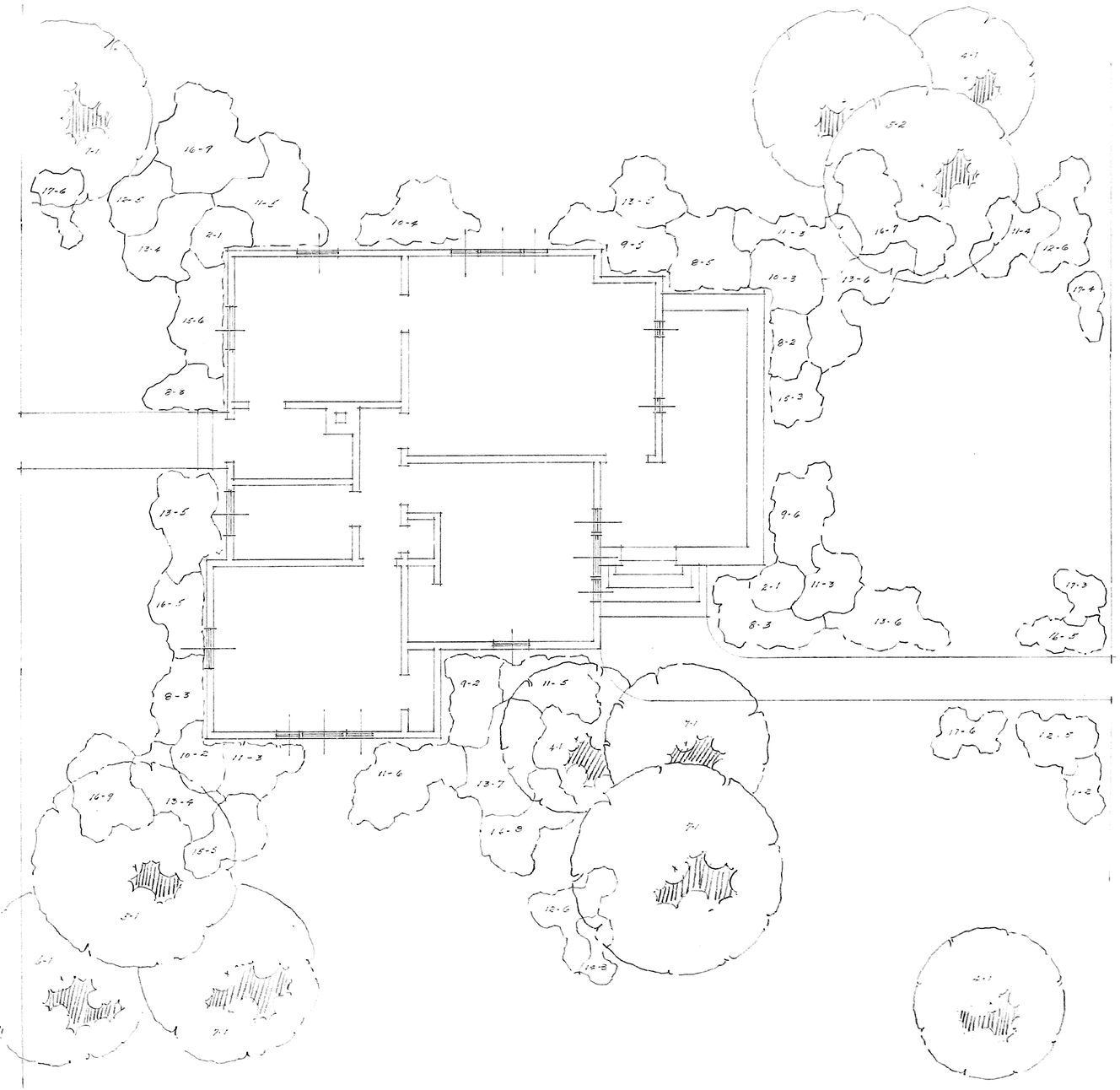
Date 11-14-33
Sheet No. 4 of 4 Sheets
Dwg. No. WC-3004A

Job completed 7-11-34

P

4

WICA_108_3004A_[id278447] **HS-06**



Legend

Key No. Botanical Name - Common Name

Evergreen Trees

1	Juniperus communis	Dwarf Juniper
2	Juniperus scopulorum	Rocky Mt. Juniper
3	Pinus ponderosa	Western Yellow Pine

Deciduous Trees

4	Acer negundo	Box Elder
5	Populus balsamifera	Broad-leaf Cottonwood
6	Populus tremuloides	Quaking Aspen
7	Ulmus americana	American Elm

Shrubs

8	Holodiscus dumosus	Mountain Spray
9	Prunus americana	Wild Plum
10	Prunus melanocarpa	Chokecherry
11	Quercus undulata	Oak (Evergreen Scrub)
12	Rhus trilobata	Sumac
13	Ribes cereum	Squaw Currant
14	Ribes oxyacanthoides	Gooseberry
15	Rosa woodsii	Wild Rose
16	Symphoricarpos rotundifolius	Buckbrush
17	Yucca glauca	Yucca

Note

First number in planting indicates key number of second number indicates quantity

Scale 1/4" = 1'-0"

HALF-SIZE REPRODUCTION

H.C.W. Project No. 4

Recommended:	Date: 12-23-36	
Chief Engineer	Date: 10/6/34	
Concurred:	Date: 11-8-34	
Approved:	Date: 11/8/34	

U.S. DEPARTMENT OF INTERIOR, NATIONAL PARK SERVICE

Planting Plan

Under

Reclamation No. W.C.3009-A

Wind Cave National Park

Drawn by Branch of Plans and Design

Date: 10-30-34

Scale: 1" = 1'/4 sheets

Drawing No. NP-WC-3015

Checked by

Landscape Arch.

WICA_108_3017_[id3216] HS-06 Planting Plans

HS-06 ca. 1970. (WICA Museum Collection #WICA 8096)

Appendix B
Historic Photographs

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

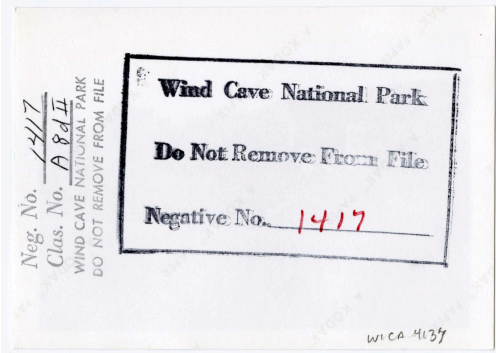
Primary Topic ***HS#*** *HS-06*
HS-06

Catalog #
WICA
4137

Photo Date ca. *1934*
Date Source *other, see HSR notes*
Photographer

Manufact. Date

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Before CCC landscaping of 1935-36, and probably before HS-05 was moved in 1935.

Park Database Description

Photographic Print and Negative of Buildings - Residence #6. Photographic Print Is Stored at Wind Cave National Park, and the Nitrate Negative Is in Cold Storage at the Midwest Archeological Center.

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

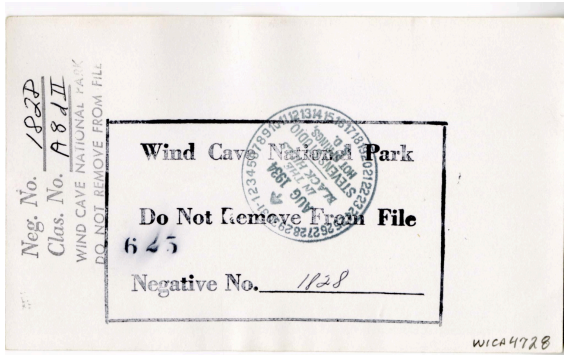
Primary Topic ***HS#*** *HS-06*
HS-06

Photo Date *1934, Aug. 31*
Date Source *Stamp on Photo*
Photographer *Stevens Studio*

Manufact. Date 8/17/1934

Catalog #
WICA
4728

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Park Database Description

Photographic Print and Negative of Building Construction - Residence #6 - Completed Building. See Also 1828. Photographic Print Is Stored at Wind Cave National Park, and the Nitrate Negative Is in Cold Storage at the Midwest Archeological Center.

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

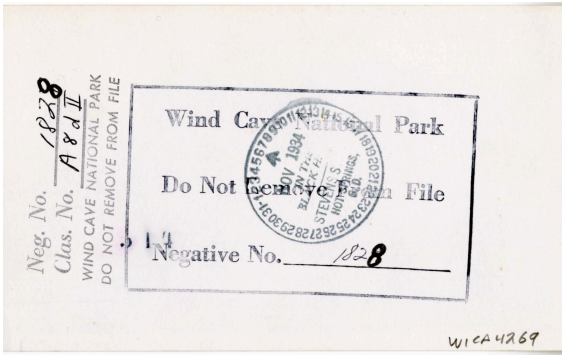
Primary Topic ***HS#*** *HS-06*
HS-06

Photo Date *1934, Nov. 6.*
Date Source *Stamp on Photo*
Photographer *Stevens Studio*

Manufact. Date 8/17/1934

Catalog #
WICA
4269

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Park Database Description

Photographic Print and Negative of Building Construction - Residence #6 - Completed Building. See Also 3553. Photographic Print Is Stored at Wind Cave National Park, and the Nitrate Negative Is in Cold Storage at the Midwest Archeological Center.

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

Primary Topic
General
HS-06

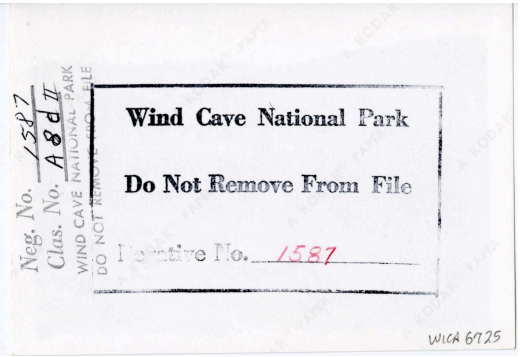
HS#
General
HS-04
HS-05
HS-06
HS-07
HS-13

Catalog #
WICA
6725

Photo Date ca. *1936*
Date Source *other, see HSR notes*
Photographer

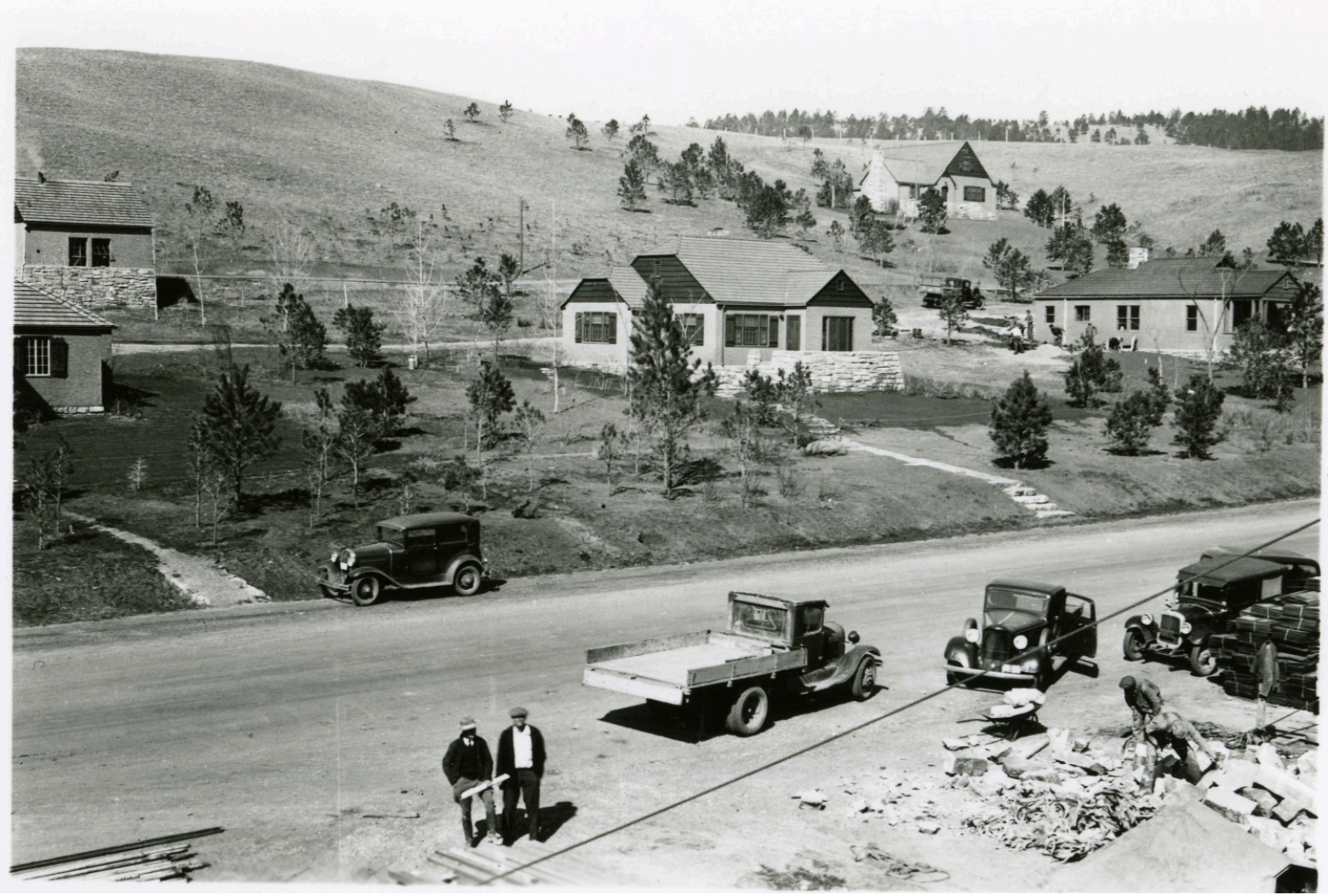
Manufact. Date

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Probably during construction of HS-01 in 1936. This is a copy of WICA #8754. This print has better quality.



Park Database Description

Photographic Print and Negative of Headquarters Area.

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

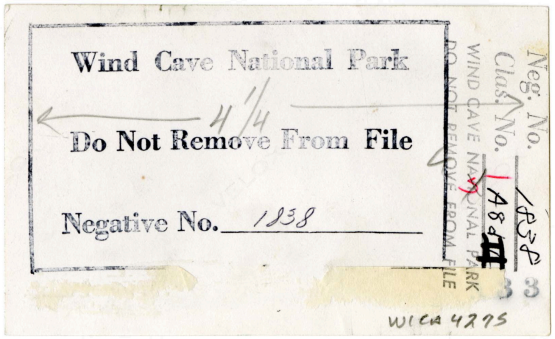
Primary Topic ***HS#*** *HS-06*
HS-06

Catalog #
WICA
4275

Photo Date ca. *1937*
Date Source *other, see HSR notes*
Photographer

Manufact. Date

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

This photo was included in "Development of National Park Areas in the Black Hills by the CCC," The Black Hills Engineer, Dec. 1937, by Edward D. Freeland.

Park Database Description

Photographic Print and Negative of Buildings - Residence #6. See Also 3558. Photographic Print Is Stored at Wind Cave National Park, and the Nitrate Negative Is in Cold Storage at the Midwest Archeological Center.

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

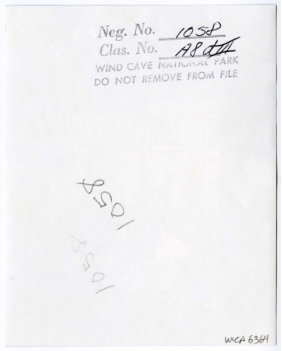
Primary Topic ***HS#*** *HS-06*
HS-06

Catalog #
WICA
6364

Photo Date ca. *1950s*
Date Source
Photographer

Manufact. Date

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Porch added to this location in 1956, per maintenance dept records. Flora Semingsen in photo.

Park Database Description

Photographic Print and Negative of Building #6 - Residence - Outside Entrance into Basement. Flora Semingsen in Picture.

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

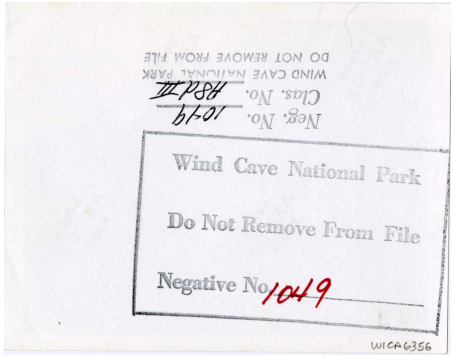
Primary Topic ***HS#*** *HS-06*
HS-06

Photo Date ca. *1959, Nov 1*
Date Source *"Manufactured Date"*
Photographer

Manufact. Date 11/1/1959

Catalog #
WICA
6356

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

ca. 1960s

Park Database Description

Photographic Print and Negative of Buldings - Residence #6.

Appendix B: Wind Cave Park-Selected Database and Photo Files Italicized text added by Deb Sheals in 2015

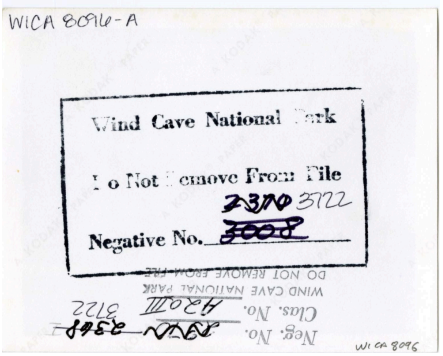
Primary Topic ***HS#*** *HS-06*
HS-06

Photo Date ca. *1970*
Date Source *"Manufactured Date"*
Photographer

Manufact. Date SPRING1970

Catalog #
WICA
8096

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Park Database Description
AUTO ACCIDENT.
HEADQUARTERS

HS-06 West Elevation. (SRJA 2014)

Appendix C
Cost Estimate

CONSTRUCTION MANAGEMENT RESOURCES, LLC
ESTIMATING • SCHEDULING • PROJECT MANAGEMENT • CONSULTING
5201 JOHNSON DRIVE, SUITE 330, MISSION, KANSAS 66205 (913) 262-6715 • FAX (913) 262-1380

Historic Structures Report - Historic Housing Area
Wind Cave National Park - Hot Springs South Dakota
Susan Richards's Johnson & Associates
Final Report Estimate 01/27/2016

DESCRIPTION		Immediate	Short Term	Long Term
HS-06 Quarters				
01 00 00 GENERAL CONDITIONS	15%	9,731	-	5,615
02 41 00 DEMOLITION		1,325	-	-
02 50 00 HAZARDOUS MATERIAL ABATEMENT		-	-	2,500
03 30 00 CAST-IN-PLACE CONCRETE		1,823	-	-
04 01 20 MASONRY RESTORATION AND CLEANING		5,623	-	-
04 20 00 MASONRY		-	-	-
05 12 00 STEEL		390	-	-
06 10 00 ROUGH CARPENTRY		500	-	-
06 13 00 EXTERIOR RESTORATION		300	-	3,000
06 40 16 INTERIOR ARCHITECTURAL WOODWORK RESTORATION		325	-	-
07 14 00 FLUID-APPLIED WATERPROOFING		-	-	-
07 20 00 STUCCO REPAIRS		20,068	-	-
07 21 00 THERMAL INSULATION		5,101	-	-
07 50 00 ROOFING		-	-	20,145
07 60 00 SHEET METAL FLASHING AND TRIM		552	-	3,019
07 92 00 JOINT SEALANTS		100	-	-
08 11 00 DOOR & FRAMES		3,150	-	-
08 32 13 STORM WINDOWS		-	-	-
08 52 00 WOOD WINDOWS		9,100	-	5,600
08 71 00 DOOR HARDWARE		-	-	-
08 80 00 GLAZING		-	-	-
09 20 00 PLASTER REPAIR		2,000	-	-
09 21 16 GYPSUM SYSTEMS		-	-	898
09 64 00 WOOD FLOORING		-	-	-
09 90 00 PAINTING		7,501	-	-
10 14 00 SIGNS		-	-	-
10 28 00 TOILET AND BATH ACCESSORIES		-	-	-
10 44 00 FIRE-PROTECTION SPECIALTIES		-	-	-
21 00 00 FIRE PROTECTION		-	-	-
22 00 00 PLUMBING		-	-	-
23 00 00 HVAC		650	-	-
26 00 00 ELECTRICAL		1,100	-	-
31 20 00 EARTH MOVING		462	-	-
31 48 13 UNDERPINNING PIERS		-	-	-
32 13 13 CEMENT CONCRETE PAVING		4,633	-	-
32 92 00 LAWN & GRASSES		173	-	-
33 10 00 WATER DISTRIBUTION		-	-	-
33 30 00 SANITARY SEWERAGE		-	-	-
33 40 00 STORM DRAINAGE		-	-	2,272
33 46 16 FOUNDATION DRAINAGE SYSTEMS		-	-	-
subtotal		74,606	-	43,049
Contractor's Fee	10%	7,461	-	4,305
subtotal		82,067	-	47,354
Design/Estimate Contingency	25%	20,517	-	11,838
subtotal		102,584	-	59,192
Escalation to Mid-Point - 04/15/2017	3.7%	3,768	-	2,174
TOTAL		**106,351**	**-**	**61,366**

***NOTE: Ground disturbance may require archeological monitoring. Costs for monitoring are not included in estimate.**

DESCRIPTION	::	QUANTITY	::	UNIT $	:	TOTAL	Immediate	Short Term	Long Term
HS-06 Quarters									
02 41 00 DEMOLITION									
Immediate									
Temporary Shoring and Lift House	::	1 LS	::	500.00	:	500	500		
Remove Pellet Stove and all related accessories and patch roof	::	1 LS	::	750.00	:	750	750		
Remove Door 106-2	::	1 EA	::	75.00	:	75	75		
						1,325	1,325	0	0
02 50 00 HAZARDOUS MATERIAL ABATEMENT									
Long Term									
Hazardous Material Abatement Testing	::	1 LS	::	1,000.00	:	1,000			1,000
Radon Mitigation System Inspection & Repair ALLOWANCE	::	1 LS	::	1,500.00	:	1,500			1,500
Extent of hazardous materials needs to be determined before accurate estimate can be rendered									
						2,500	0	0	2,500
03 30 00 CAST-IN-PLACE CONCRETE									
Immediate									
New Concrete Cap @ Basement	::	107 SF	::	10.00	:	1,073	1,073		
Fill Post Void and Poor Cap	::	1 LS	::	500.00	:	500	500		
Repair to Basement Floor	::	1 LS	::	250.00	:	250	250		
						1,823	1,823	0	0
04 01 20 MASONRY RESTORATION AND CLEANING									
Immediate									
Repoint Basement Walls ALLOWANCE	::	1 LS	::	600.00	:	600	600		
Repoint Foundation Walls	::	90 SF	::	8.00	:	723	723		
Clean Foundation Walls	::	361 SF	::	6.00	:	2,168	2,168		
Mortar Wash Foundation Walls	::	74 LF	::	8.00	:	591	591		
Repair Crack In Porch	::	5 LF	::	25.00	:	125	125		
Clean North Porch Steps and Retaining Wall	::	236 SF	::	6.00	:	1,416	1,416		
						5,623	5,623	0	0
04 20 00 MASONRY									
						0	0	0	0
05 12 00 STEEL									
Immediate									
Pipe Railing @ Stair	::	6 LF	::	65.00	:	390	390		
						390	390	0	0
06 10 00 ROUGH CARPENTRY									
Immediate									
Sister Ceiling Joist @ Hip Rafter Support	::	1 EA	::	500.00	:	500	500		
						500	500	0	0
06 13 00 EXTERIOR RESTORATION									
Immediate									
Rehabilitate and Paint Foundation Vent	::	3 EA	::	100.00	:	300	300		
Long Term									
Replicate Rustic Shutters	::	5 PR	::	600.00	:	3,000			3,000
						3,300	300	0	3,000
06 40 16 INTERIOR ARCHITECTURAL WOODWORK RESTORATION									
Immediate									
Install New Trim at Windows 100 & 101	::	2 EA	::	150.00	:	300	300		
Remove and Reinstall Window Sill @ Window 100	::	1 EA	::	25.00	:	25	25		
						325	325	0	0
07 14 00 FLUID-APPLIED WATERPROOFING									
	::		::		:	0			0
						0	0	0	0
07 20 00 STUCCO REPAIRS									
Immediate									
General STUCCO Wall Repair (allow 50%)	::	669 SF	::	30.00	:	20,068	20,068		
						20,068	20,068	0	0
07 21 00 THERMAL INSULATION									
Immediate									
Additional Insulation In the Attic	::	1,101 SF	::	1.00	:	1,101	1,101		
Test Exterior Walls for Insul and Patch holes ALLOWANCE	::	1 LS	::	4,000.00	:	4,000	4,000		
						5,101	5,101	0	0
07 50 00 ROOFING									
Long Term									
Demo Roofing and Install New Decra Steel Roofing System	::	1,637 SF	::	12.00	:	19,645			19,645
Install Cricket @ Chimney	::	1 EA	::	500.00	:	500			500
						20,145	0	0	20,145
07 60 00 SHEET METAL FLASHING AND TRIM									
Immediate									
Downspout Extensions	::	4 EA	::	50.00	:	200	200		
Gutter Covers	::	70 LF	::	5.00	:	352	352		
Long Term									
New Custom Box Gutters	::	70 LF	::	25.00	:	1,759			1,759
Custom Downspouts	::	84 LF	::	15.00	:	1,260			1,260
						3,570	552	0	3,019

DESCRIPTION	::	QUANTITY	::	UNIT $	:	TOTAL	Immediate	Short Term	Long Term
HS-06 Quarters									
07 92 00 JOINT SEALANTS									
Immediate									
Misc Exterior Caulking	::	1 LS	::	100.00	:	100	100		
						100	100	0	0
08 11 00 DOOR & FRAMES									
Immediate									
New Storm Door 100/3	::	1 PR	::	850.00	:	850	850		
Restore Interior Doors 100/3 and Sidelites	::	1 PR	::	2,000.00	:	2,000	2,000		
Restore Door 105-2	::	1 EA	::	300.00	:	300	300		
						3,150	3,150	0	0
08 32 13 STORM WINDOWS									
	::		::		:	0			0
						0	0	0	0
08 52 00 WOOD WINDOWS									
Immediate									
Replicate Storm Doors & Sidelites @ Door 100-3 - Restore and Reuse Hardware	::	1 PR	::	2,000.00	:	2,000	2,000		
Install Historic Window	::	5 EA	::	1,400.00	:	7,000	7,000		
Repair Storm @ Back Door	::	1 EA	::	100.00	:	100	100		
Long Term									
Replace Windows	::	4 EA	::	1,400.00	:	5,600			5,600
						14,700	9,100	0	5,600
08 71 00 DOOR HARDWARE									
	::		::		:	0			0
						0	0	0	0
08 80 00 GLAZING									
	::		::		:	0			0
						0	0	0	0
09 20 00 PLASTER REPAIR									
Immediate									
Repair Interior Plaster and Paint as Required	::	1 LS	::	2,000.00	:	2,000	2,000		
						2,000	2,000	0	0
09 21 16 GYPSUM SYSTEMS									
Long Term									
Demo and Repair Ceiling in Kitchen	::	128 SF	::	7.00	:	898			898
						898	0	0	898
09 64 00 WOOD FLOORING									
	::		::		:	0			0
						0	0	0	0
09 90 00 PAINTING									
Immediate									
Paint Interior Windows 102 and 103	::	2 EA	::	50.00	:	100	100		
Stain Interior Windows 100 and 101	::	2 EA	::	75.00	:	150	150		
Misc Stucco Painting	::	1,338 SF	::	1.50	:	2,007	2,007		
Paint Interior Walls after Plaster Repairs ALLOWANCE	::	1 LS	::	3,000.00	:	3,000	3,000		
Paint Floor and Steps @ 106	::	109 SF	::	5.00	:	546	546		
Paint/Stain Wood Trim/Siding Gables	::	340 SF	::	5.00	:	1,698	1,698		
						7,501	7,501	0	0
10 14 00 SIGNS									
	::		::		:	0			0
						0	0	0	0
10 28 00 TOILET AND BATH ACCESSORIES									
	::		::		:	0			0
						0	0	0	0
10 44 00 FIRE-PROTECTION SPECIALTIES									
	::		::		:	0	0		
						0	0	0	0
21 00 00 FIRE PROTECTION									
not applicable	::		::		:	0	0		
						0	0	0	0
22 00 00 PLUMBING									
not applicable	::		::		:	0	0		
						0	0	0	0
23 00 00 HVAC									
Immediate									
Extend Exhaust Range Fan Vent Through Roof	::	1 EA	::	300.00	:	300	300		
Reconnect Dryer Vent	::	1 EA	::	50.00	:	50	50		
Extend Exhaust Fan Vent Through Roof - Bathroom 104	::	1 EA	::	300.00	:	300	300		
						650	650	0	0

DESCRIPTION	::	QUANTITY	::	UNIT $	:	TOTAL	Immediate	Short Term	Long Term
HS-06 Quarters									
26 00 00 ELECTRICAL									
Immediate									
Install GFCI Outlets @ Existing Locations	::	7 EA	::	150.00	:	1,050	1,050		
Install Globe on Light Fixture	::	1 EA	::	50.00	:	50	50		
						1,100	1,100	0	0
31 20 00 EARTH MOVING									
Immediate									
Regrade at West and South Side of House	::	58 SY	::	8.00	:	462	462		
						462	462	0	0
31 48 13 UNDERPINNING PIERS									
	::		::		:	0	0		
						0	0	0	0
32 13 13 CEMENT CONCRETE PAVING									
Immediate									
Remove and Pour New Landing	::	36 SF	::	8.00	:	288	288		
Repair or Replace Concrete Threshold @ 106-1	::	1 EA	::	650.00	:	650	650		
Remove and Set new Stone Patio	::	144 SF	::	15.00	:	2,160	2,160		
Sawcut and Install Soft Joint @ Front Porch	::	21 LF	::	40.00	:	840	840		
Repair Front Stair Landing	::	46 SF	::	15.00	:	695	695		
						4,633	4,633	0	0
32 92 00 LAWN & GRASSES									
Seed	::	58 SY	::	3.00	:	173	173		
						173	173	0	0
33 10 00 WATER DISTRIBUTION									
	::		::		:	0			0
						0	0	0	0
33 30 00 SANITARY SEWERAGE									
	::		::		:	0			0
						0	0	0	0
33 40 00 STORM DRAINAGE									
Install French Drain	::	65 LF	::	35.00	:	2,272			2,272
						2,272	0	0	2,272
33 46 16 FOUNDATION DRAINAGE SYSTEMS									
	::		::		:	0			0
						0	0	0	0