

Historic Housing Area Historic Structures Report

HS-05 Quarters

Wind Cave National Park

Volume IV of VIII



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Cover Photo:

HS-05 Quarters Existing Structure, View Northeast. (SRJA 2014)

Table of Contents

List of Figures.....	iii
Introduction	1
Significant Features.....	1
History and Significance	3
Description of Existing Conditions	
Architectural.....	21
Structural	61
Mechanical, Electrical and Plumbing	66
Existing Condition Drawings (Fold-out Pages)	
Treatment Recommendations	83
Building Egress Fire Code Evaluation.....	85
Treatment Drawings (Fold-out Pages)	
Technical Appendixes	
A. Historic Drawings	
B. Historic Photograph Information Pages	
C. Cost Estimate	

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List of Figures

Notes:

All references to the WICA Museum Collections are cited by the title WICA, followed by the Museum Collections catalog number. For example--WICA 3754 refers to record number 3754 in the Wind Cave National Park museum collection.

See Appendix B for more information about the photo files.

1. 1924 sketch of the proposed house, by Roy Brazell. (National Archives RG79, Central Classified Files. 1907-1949, Box 448. National Archives II, College Park, MD.)
2. Brazell's 1924 sketch of the proposed floorplan. (National Archives RG79, Central Classified Files. 1907-1949, Box 448. National Archives II, College Park, MD) and floorplan for the Aladdin "Franklin" Model, Aladdin Read-Cut Houses Catalog, (Bay City, Michigan: Aladdin Company, 1920, 36.)
3. Table of Previous Titles.
4. Location Map.
5. Summary of Alterations.
6. HS-05, ca.1926. (WICA 4163)
7. HS-05, 1927, Mar. 4. (WICA 188)
8. HS-05, 1929, Apr. 4. (WICA 4265)
9. HS-05, ca.1930s. (WICA 8687)
10. HS-05, ca.1934. (WICA 4488)
11. HS-05, 1934, Nov. 10. (WICA 4335)
12. HS-05, ca.1935. (WICA 4732)
13. HS-05, ca.1935. (WICA 4274)
14. HS-05, 1935, May. (WICA 4339)
15. HS-05, 1935, May 1. (WICA 4259)
16. HS-05, ca.1935, May 1. (WICA 4722)
17. HS-05, ca.1940s. (WICA 4272)
18. HS-05, ca.1952. (WICA 4273)
19. HS-05, ca.1952. (WICA 4731)
20. HS-05, ca.1959, Nov. 1. (WICA 6357)
21. HS-05, ca.1969. (WICA 6702)
22. HS-05, ca.1970. (WICA 7116_b)

Roof and Windows

- R1. Valley and gutters filled with pine needles. (SRJA 2014)
- R2. Detail of wood shingle roof and gutter profiles. Detail of HS-05, ca.1940s. Note the storm windows are a light color. (WICA 4272)
- W1. Detail of the 1934 construction drawings. (See Appendix A)
- W2. Typical mulled Window 102 with original wood trim and metal storm window. (SRJA 2015)
- W3. Detail typical mulled window with original wood trim and storm window at Window 102. (SRJA 2015)

- W4. Detail of typical window trim deterioration where the historic trim is exposed. This shows signs of many peeling paint layers and wood rot at Window 103. (SRJA 2015)
- W5. Photograph and detail of original top-hung wood screened sash at original wood Window 107. (SRJA 2015)
- W6. Detail of original top-hung storm sash at original wood Window 114. (SRJA 2015)
- W7. Detail of inappropriate aluminum interior replacement window. (SRJA 2014)
- W8. Detail of inappropriate aluminum interior replacement window with exterior brown storm window. (SRJA 2014)
- W9. Detail of historic wood window on the left adjacent to replacement aluminum casement windows with metal panning over the trim. Note the metal trim is much thicker at the side and at the sill. (SRJA 2015)
- W10. Detail of aluminum replacement window metal trim and sill panning. (SRJA 2015)
- W11. Detail of inappropriate aluminum interior replacement window. (SRJA 2014)
- W12. Detail of inappropriate aluminum interior replacement window. (SRJA 2014)

Exterior Existing Conditions

- X1. East Elevation. (SRJA 2014)
- X2. Detail of HS-05 front porch, 1935, May 1. Note the double columns on the porch. (WICA 4259)
- X3. Northeast corner of the building. (SRJA 2014)
- X4. Front porch stone steps. (SRJA 2015)
- X5. Porch gable detail. (SRJA 2015)
- X6. Porch east wall detail with cracking at floor level. (SRJA 2015)
- X7. Front porch floor detail. Note the integral concrete curbing at the perimeter and drainage hole through the east porch wall. (SRJA 2014)
- X8. Porch northeast column and wall cap deterioration. (SRJA 2015)
- X9. Porch southeast column and wall cap deterioration. (SRJA 2015)
- X10. Northeast corner of porch gable. From this angle, the wood cornice on the north side of the house appears to have been replaced with a flat trim board. This detail is not very noticeable. (SRJA 2014)
- X11. Door 100/1 Aluminum storm door. Note the weatherstripping at the base has become detached and requires repair or replacement. (SRJA 2014)
- X12. Door 100/1. (SRJA 2014)
- X13. Door 100/1 hardware. (SRJA 2014)
- X14. South Elevation. (SRJA 2014)
- X15. South Elevation crack detail at porch. (SRJA 2015)
- X16. South Elevation horizontal crack detail at porch floor. (SRJA 2015)
- X17. South Elevation detail of deteriorating wood trim at window and missing stucco at Window 106. (SRJA 2015)
- X18. South Elevation detail at Window 104. (SRJA 2015)
- X19. South Elevation basement Window 001. The exposed pipe on the left is the downspout. The painted pipe on the right is the exposed kitchen sink vent pipe. (SRJA 2015)
- X20. South Elevation chimney detail. (SRJA 2015)
- X21. West Elevation. (SRJA 2015)

- X22. West Elevation. (SRJA 2015)
- X23. West Elevation. (SRJA 2015)
- X24. West Elevation. (SRJA 2015)
- X25. West Elevation. (SRJA 2015)
- X26. West Elevation detail at sidewalk and stucco wall. (SRJA 2015)
- X27. West Elevation detail at door. (SRJA 2015)
- X28. West Elevation detail at south side of concrete patio. (SRJA 2015)
- X29. West Elevation Window 109. (SRJA 2015)
- X30. North Elevation. (SRJA 2015)
- X31. North Elevation of house looking west at north-south grad cross-slope towards house. (SRJA 2015)
- X32. North Elevation Window 108. Note the grade is above the top of the stone foundation wall (SRJA 2015)
- X33. North Elevation window sill panning detail. (SRJA 2015)
- X34. North Elevation crack detail east of foundation vent. (SRJA 2015)

Interior Existing Conditions

- B-1. Basement Looking northeast. (SRJA 2014)
- B-2. Basement Looking north. (SRJA 2014)
- B-3. Basement Looking east. (SRJA 2014)
- B-4. Basement Looking southeast. (SRJA 2014)
- B-5. Basement Looking south. (SRJA 2014)
- B-6. Basement Looking west. (SRJA 2014)
- B-7. Basement 001 east foundation wall looking at access hole to Crawl Space 002. (SRJA 2014)
- B-8. Crawl Space 002 Looking south along back side of foundation wall. (SRJA 2014)
- B-9. Crawl Space 002 Looking east. (SRJA 2014)
- B-10. Basement 001 Looking south and east. The red arrow points to where there used to be a larger crawl space access that has been infilled. (SRJA 2014)

- 1-1. Typical Window millwork. (SRJA 2014)
- 1-2. Typical door and window head millwork detail. (SRJA 2014)
- 1-3. Typical door and window head millwork detail. (SRJA 2014)
- 1-4. Typical door plinth and baseboard. This baseboard has a shoe molding. (SRJA 2014)
- 1-5. Living Room 100 looking at north and east walls. (SRJA 2014)
- 1-6. Living Room 100 looking at east wall. (SRJA 2014)
- 1-7. Living Room 100 looking at south wall. (SRJA 2014)
- 1-8. Living Room 100 looking at west wall towards the Dining Room. (SRJA 2014)
- 1-9. Living Room 100 looking at crack in wall above Door 100/2. (SRJA 2014)
- 1-10. Living Room 100 looking at cracks in ceiling. (SRJA 2014)
- 1-11. Living Room 100 wall sconce detail. (SRJA 2014)
- 1-12. Dining Room 101 north wall. (SRJA 2014)
- 1-13. Dining Room 101 east wall. (SRJA 2014)
- 1-14. Dining Room 101 south wall. (SRJA 2014)
- 1-15. Dining Room 101 east wall. Note the flue is disconnected from the pellet stove and is covered. (SRJA 2014)
- 1-16. Kitchen 102 east wall. (SRJA 2014)
- 1-17. Kitchen 102 south wall looking at Window 105. (SRJA 2014)

- 1-18. Kitchen 102 west wall. (SRJA 2014)
- 1-19. Mud Room 103 north wall. (SRJA 2014)
- 1-20. Mud Room 103 east wall. (SRJA 2014)
- 1-21. Mud Room 103 south and west walls. (SRJA 2014)
- 1-22. Mud Room 103 west wall. (SRJA 2014)
- 1-23. Mud Room 103 light fixture detail. (SRJA 2014)
- 1-24. Stair 104 Looking north. (SRJA 2014)
- 1-25. Stair 104 Detail looking south. (SRJA 2014)
- 1-26. Stair 104 Window 107. One of two original 1/1 double-hung wood windows in the house. (SRJA 2014)
- 1-27. Stair 104 west wall. Note the old fuse panel that is no longer used. (SRJA 2014)
- 1-28. Stair 104 Handrail detail. (SRJA 2014)
- 1-29. Stair 104 from basement. (SRJA 2015)
- 1-30. Hall 105 Looking east. (SRJA 2014)
- 1-31. Hall 105 Looking west. (SRJA 2014)
- 1-32. Hall 105 Wood laminate floor and threshold installation details. (SRJA 2014)
- 1-33. Bedroom 106 Looking north and east. (SRJA 2014)
- 1-34. Bedroom 106 Looking east. Note the staining on the wall above the baseboard heater. (SRJA 2014)
- 1-35. Bedroom 106 Looking south. (SRJA 2014)
- 1-36. Bedroom 106 Closet looking north. (SRJA 2014)
- 1-37. Bedroom 106 Light. (HEI 2015)
- 1-38. Bedroom 107 Looking north. (SRJA 2014)
- 1-39. Bedroom 107 Looking south and west. (SRJA 2014)
- 1-40. Bedroom 107 Looking west. (SRJA 2014)
- 1-41. Bedroom 107 Closet. (SRJA 2014)
- 1-42. Bathroom 108 Looking north. (SRJA 2014)
- 1-43. Bathroom 108 Looking west. (SRJA 2014)
- 1-44. Bathroom 108 Looking south. (SRJA 2014)
- 1-45. Bedroom 109 Looking north. (SRJA 2014)
- 1-46. Bedroom 109 Looking east. (SRJA 2014)
- 1-47. Bedroom 109 Looking south. (SRJA 2014)
- 1-48. Bedroom 109 Looking west. (SRJA 2014)
- 1-49. Closet 109A Looking north. (SRJA 2014)
- 1-50. Closet 109A Looking west. (SRJA 2014)

Structural Existing Conditions

- S1. Timber post on slab-on-grade, steel post buried in concrete. (SEA 2015)
- S2. West girder in basement. (SEA 2015)
- S3. Girders bearing on chimney haunch. (SEA 2015)
- S4. Post bearing on pilaster, girder cantilevers past post. (SEA 2015)
- S5. Crack over Door 100/2. (SEA 2015)
- S6. Crack over Door 109/1. (SEA 2015)
- S7. Crack in ceiling of room 100. (SEA 2015)
- S8. 1x members supporting hip rafter. (SEA 2015)
- S9. Crack in south wall. (SEA 2015)
- S10. Crack in foundation, north elevation. (SEA 2015)

Mechanical, Electrical and Plumbing Existing Conditions

MEP01. Residence – HS-5. (SRJA 2014)

- M01. Example of electric baseboard heaters in Mud Room 103. (HEI 2015)
- M02. Dining Room 102, Pellet burner and capped flue. (HEI 2015)
- M03. Pellet burner thermostat in Living Room 100. (HEI 2015)
- M04. Pellet burner flue termination. (HEI 2015)
- M05. Ceiling fan in Dining Room 101. (HEI 2015)
- M06. Kitchen 102, Exhaust hood and termination. (HEI 2015)
- M07. Mud Room 107, Dryer vent and termination. (HEI 2015)
- M08. Bathroom – 108, Exhaust fan and termination. (HEI 2015)
- M09. Electric heater in Kitchen 102. (HEI 2015)
- M10. Electric heater in Basement 001. (HEI 2015)

- P01. Shutoff valves, irrigation vacuum breaker, and sanitary sewer cleanout. (HEI 2015)
- P02. Exterior shutoff valve for water system. (HEI 2015)
- P03. Irrigation vacuum breaker. (HEI 2015)
- P04. Wall hydrant. (SRJA 2014)
- P05. Domestic electric water heater in Basement 001. (HEI 2015)
- P06. Domestic water entry in Basement 001. (HEI 2015)
- P07. Sanitary sewer cleanout in east yard. (HEI 2015)
- P08. Example of exterior vent piping. (HEI 2015)
- P09. Stainless steel two-compartment sink in Kitchen 104. (HEI 2015)
- P10. Washing machine connections in Mud Room 103. (HEI 2015)
- P11. Lavatory and water closet in Bathroom 108. (HEI 2015)
- P12. Shower in Bathroom 108. (HEI 2015)
- P13. Example of gutter and downspout systems. (HEI 2015)

- E01. Service conductors at weatherhead on the west side of the house. (HEI 2015)
- E02. Exterior electrical service meter on the west side of the house. (HEI 2015)
- E03. Electrical service panelboard located in Basement 001. (HEI 2015)
- E04. Electrical panel located in Basement 001. (HEI 2015)
- E05. Light Fixture located in Basement 001. (HEI 2015)
- E06. Light fixture located in Living Room 100. (SRJA 2014)
- E07. Ceiling fan located in Dining Room 101. (HEI 2015)
- E08. Light fixture located in Kitchen 102. (SRJA 2014)
- E09. Light fixture located above the sink in Kitchen 102. (HEI 2015)
- E10. Light fixture located above the laundry area in Mud Room 103. (SRJA 2014)
- E11. Light fixture located in Bedrooms 106, 107, and 109. (HEI 2015)
- E12. Light Fixture located in Bathroom 108. (SRJA 2014)
- E13. Decorative sconce located in Bathroom 108. (HEI 2015)
- E14. Telephone service entrance located on the north exterior of the house. (SRJA 2014)

- F01. Fire extinguisher in Basement 001 (HEI 2015)

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 IV is to serve as a guide for the future caretaking of this significant property, HS-05 Quarters. This volume focuses on the individual history, review of existing conditions and treatment recommendations unique to HS-05.

The one-story HS-05 Quarters was built in 1924 as a ranger house. The 1,056 square feet house was originally located closer to the road, just north and east of its current location (Figure 9). In 1935, the house was moved, expanded and extensively remodeled (Figure 14). The building currently serves as seasonal housing for park staff. The house is built into the hillside and faces east toward the Administration Building with a gabled front porch (Figure 15). HS-05 is in nearly original 1935 condition, 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-05 is in overall good condition, having been very well maintained for the last 91 years. Raised grade along the west and north sides of the house is causing deterioration of the stucco exterior. The stone foundation requires significant repointing. 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 remodeling of outdated spaces.

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 – Hipped and gable roofs.
- Basic Footprint – Rectangular with front porch and north addition projections.
- Porches, stoops and stairs – Gabled front porch with stucco low wall and simple square wood columns. Stone front steps and stone wing walls.
- Stonework—Native stone laid in a random ashlar pattern.
- 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 - Only original window sash remain in closets. Window trim remains under the metal panning.
- Doors – Original V-joint tongue and groove front door with original hardware (Door 100/1). Original paneled back door with glass (Door 103/1).
- Light fixtures – Fixture over back door (missing shade).

Interior:

- Original interior wood doors and hardware (all interior doors).
- 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, Kitchen flush mount light, Mud Room flush mount light.
- Plan and room layout (Living areas and bedrooms most important. Kitchen and bath finishes have been altered).

History and Significance of HS-05 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-05, now referred to as Quarters, was built in 1924 to serve as a ranger's cabin. The contractor for the project was Laurence Henry Kaudy of South Dakota. Between 1919 and 1924 visitation to the park nearly doubled, and the permanent staff was expanded to meet the increased demand. The "ranger's cabin" (HS-05) was built to house the needed additional employees.¹ Like the first superintendent's house (HS-04), this building was built without the benefit of a specific allocation in the annual budget. The 1924 Annual Superintendent's Report noted that "No funds were appropriated specifically for construction this year but it was necessary to build a small ranger cabin to house the additional employees required to handle the increased number of visitors."²

A letter in another file showed that the superintendent at the time, Roy Brazell, was able to obtain permission to build the house by using a prefabricated "kit" house, which proved to be much less expensive than building it from scratch.³ Brazell's letter noted that using a "ready cut and fitted" house would save as much as 50% of the cost of building from scratch. He also claimed that it would likely be of better quality, as he had difficulty acquiring good quality lumber in the area. His use of the term "ready cut" is a likely indication that he had been looking at catalogues of the Aladdin Company, a leading supplier of prefabricated house kits, which referred to their products as "Readi-cut Houses." A sketch and plan included with that letter is very similar to plans published in the Aladdin catalogues of the late 1910s and early 1920s, and also very close to what was constructed in 1924 (Figures 1 and 2). Harris Homes, who also was a leading producer of 'Ready-Cut System' houses produced many simple one-story bungalow houses, including the 'Presto-Up' patented bolt together buildings that were marketed to the US Government. A search of several manufacturers from this time period beginning in 1920 through 1924 did not reveal the model of this exact home constructed at Wind Cave. Other popular manufacturers included: Bilt-Well; L. F. Garlinghouse; Fenner Ready Built; Gordon-Vantine; Radford Bungalows; Bennett Better Built; and Sears.

The house was originally located close to the road, just a few hundred feet northeast of the present site (Figure 4). In 1935, the house was moved to the present location, expanded and radically remodeled on the exterior to match other buildings in the park (Figures 13 and 14). Plans for the remodeling project were completed in August of 1934, by the National Park

¹ Kenneth W. Karsmizki, 1995. "Wind Cave National Park Administrative and Utility Area Historic District." *National Register of Historic Places*.; 1921 Superintendent's Annual Report, Wind Cave National Park. (Copy on file at the WICA Library.) Hereafter referred to by year as WICA Superintendent's Report.

² 1921 Superintendent's Annual Report, Wind Cave National Park, (Copy on file at the WICA Library.) Hereafter referred to by year as WICA Superintendent's Report.

³ National Archives RG79, Central Classified Files 1907-1949, Box 448. National Archives II, College Park, MD.

Service Branch of Plans and Design, and construction concluded in June 1935.⁴ The remodeling plans were signed by “Kerr” of the National Park Service (Appendix A). Much of the labor for the 1935 project was supplied by the CCC (also known as Emergency Conservation Work - ECW) crews; this was the ECW project #2 at Wind Cave. Project #1 was the construction of HS-03. (See the following timeline for more information on changes). Alterations included the relocation of interior partitions (expanding the hall to the east), an addition on the north side to expand the bedroom and closets, an addition to the west side of the house, constructing a basement and new stair, construction of a new brick and stone chimney, installation of new window trim and windows, removal of all wood shingle siding and installation of new stucco exterior finish, reconstruction of the front porch, removal of overhanging eaves and installation of new exterior cornice, refinishing wood flooring, and installation of new roof shingles and staining wood shingles. It is unknown exactly what was meant by staining the wood shingles. Perhaps remnants of original wood shingles could be located in the attic to provide evidence. If the shingles were indeed stained, this would have dramatically changed the appearance of the overall building.

A 1961 management plan called for the demolition of this and the other houses across from the administration building as soon as they had “served reasonably their useful lives.” The plan was not executed, and in 1986 all of the buildings in the housing area, including this one, were reclassified as “Historical Buildings.” HS-05 Quarters is a contributing resource in the Wind Cave Historic District and it is significant as one of the oldest buildings of at Wind Cave National Park.



Figure 1. 1924 sketch of the proposed house, by Roy Brazell. (National Archives RG79, Central Classified Files. 1907-1949, Box 448. National Archives II, College Park, MD)

⁴ Appendix A, HS-05, WICA_108_3014 [id278472].; June, 1935 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.

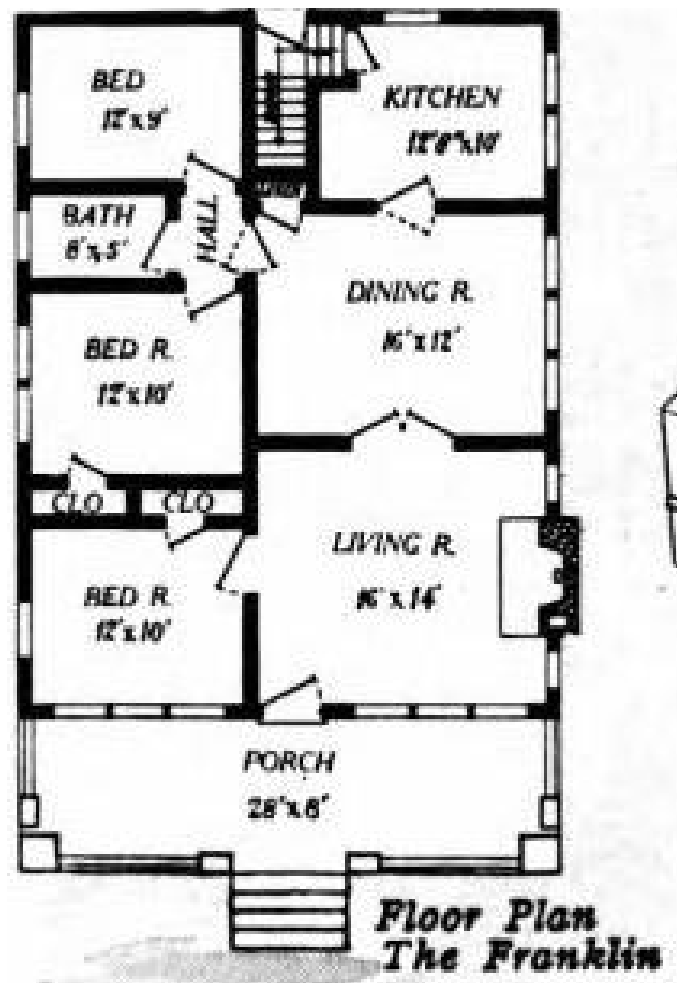
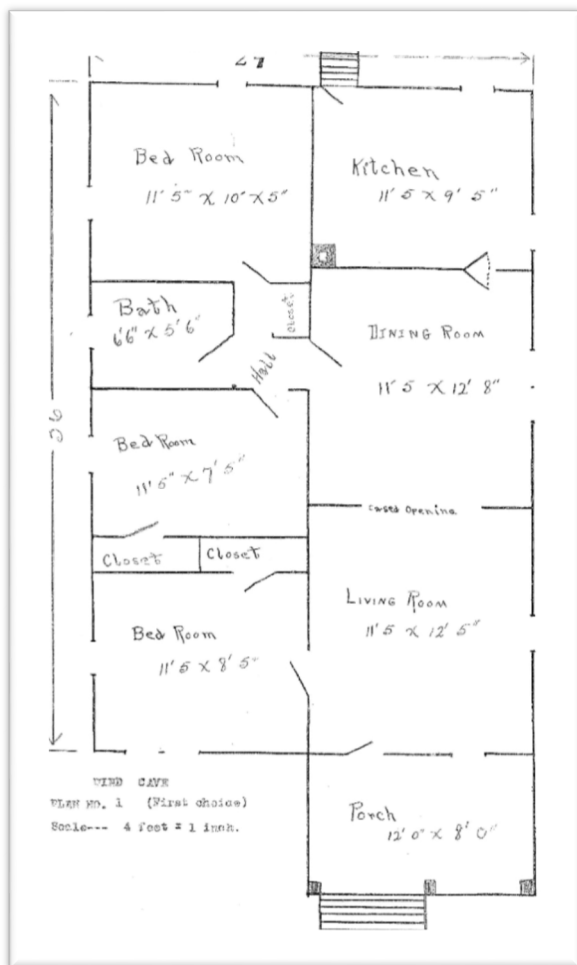


Figure 2. Brazell's 1924 sketch of the proposed floorplan. (National Archives RG79, Central Classified Files) 1907-1949, Box 448. National Archives II, College Park, MD) Right: Floorplan for the "Franklin" Model, Aladdin Read-Cut Houses Catalog, (Bay City, Michigan: Aladdin Company, 1920, 36)

Current Title: HS-05 Quarters 5 FMSS Asset Number 27932 LCS ID 010743		
Previous Name	Date of Name	Source of Name and Notes
Ranger's Cabin	1924	Superintendent's Reports
Employee's Residence	1934	Plans
Employee's Residence #3	1940	1940 Master Plan
Q-05	ca. 1949-1995	Maintenance Department Files
Residence 5	1963	1963 Site Plan
#5 Residence	1976	Classified Structure Field Inventory Report
Residence 1934	1988	1988 Resource Management Plan
Ranger Cabin (HS-5)	1995	National Register Nomination
Quarters 5	2000	Current WICA Staff, LCS
H-B-05 Employee Residence (Ranger Cabin) (HS-5)	2005	Cultural Landscape Report

Figure 3. Table of Previous Titles.

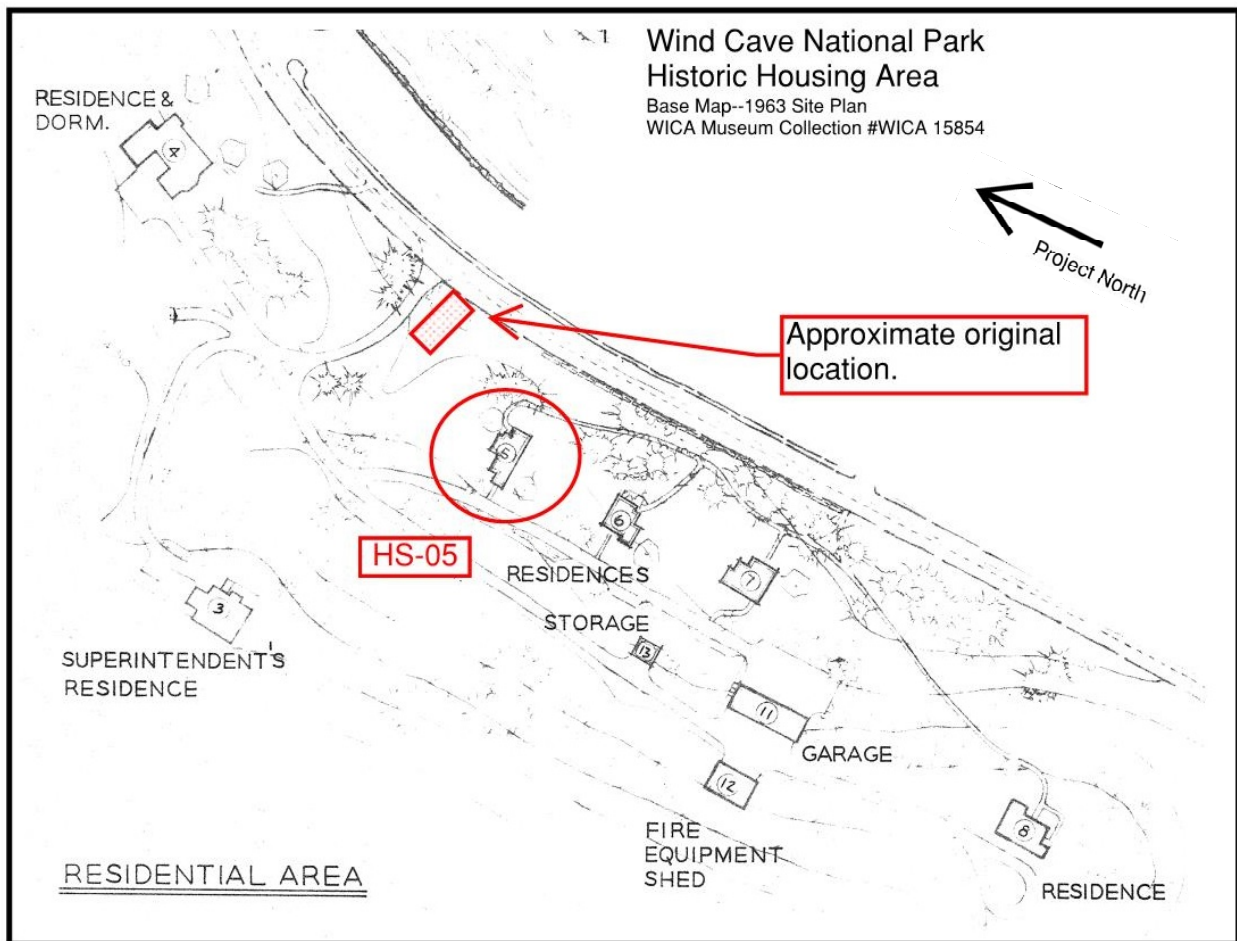


Figure 4. Location Map.

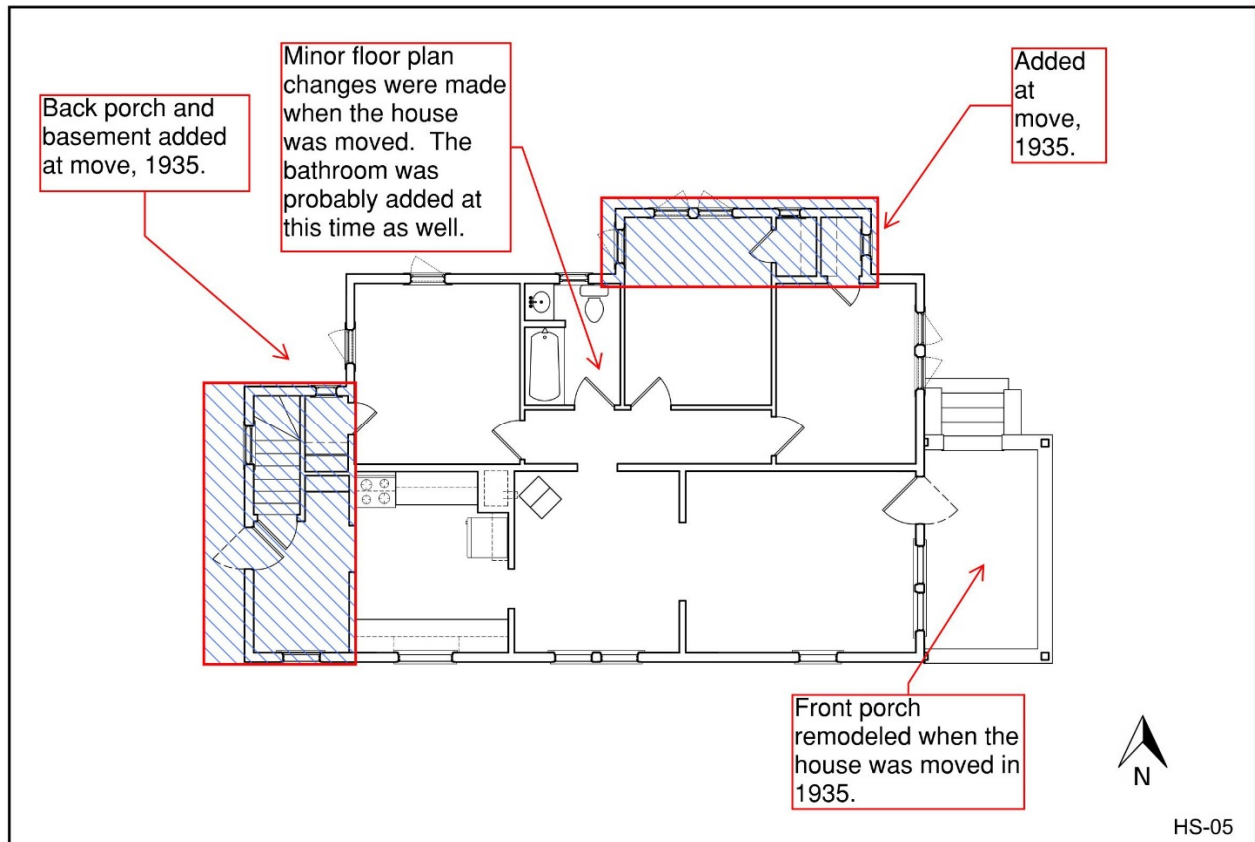


Figure 5. Summary of Alterations.

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.]

1924

Built by Laurence Henry Kaudy of South Dakota. Identified as “ranger cabin”. Construction specifications found in property file at WCNP. Exterior walls were originally covered in shingles. [Karsmizki, “Administrative and Utility Area NR Nomination,” 7.41]

Superintendent report notes that the number of visitors had doubled in the past 5 years. “No funds were appropriated specifically for construction this year but it was necessary to build a small ranger cabin (HS-05) to house the additional employees required to handle the increased number of visitors.” [1921 WICA Superintendent’s Annual Report]

1929

Altered [List of Classified Structures.]

1934

August 17, 1934. Plans completed for remodel of Employee’s Residence (HS-05). Plans were possibly drawn by “Kerr” of the National Park Service Branch of Plans and Design, recommended by Edward A. Nickel, for Ex. Chief Architect, 10/25/1934, and approved by Arno B. Camerer, Director on 11/13/1934. [Appendix A.]

1935

February 1935. Building moved to new location, interior additions, partitions relocated. Lath almost complete. Getting ready for plaster. Wiring complete. [March, 1935 WICA Superintendent’s Monthly Report.]

April 1935. “Remodeling of the old Employee’s residence is nearing completion.” Plastering, calcimining, painting, sanding of floors completed. Exterior stucco and staining of roof. To be ready for occupancy in May. [May, 1935 WICA Superintendent’s Monthly Report.]

May 16, 1935. Alteration to Employee’s residence (HS-05) complete. [June, 1935 WICA Superintendent’s Monthly Report.]

September 1936. Superintendent reports that work on HS-05 included “a small basement excavated under clerk’s residence and Arcola heating system moved from back porch into basement. Allows for better efficiency and more room on back porch.” [October, 1936 WICA Superintendent’s Monthly Report.]

1949

Value \$10,440.00. [Maintenance Department Files.]

1951

June 15. Project completion Report. Replaced hot water plant and modernized piping system. Furnaces installed - oil burner. Forced warm air heat. [Maintenance Department Files.]

1952

Plumbing Contract: Installed 1-1" shut off valve on main water line, P trap in kitchen, drain stopper unit bathroom. Windows replaced. [Maintenance Department Files]; [Karsmizki, "Administrative and Utility Area NR Nomination," 7.42]

Insulation installed in exterior walls. [WICA Museum Collection #WICA 4273.]

1954

Bathroom tiled. [Maintenance Department Files.]

1958

Repair wiring- add attic electricity, Paint and stain exterior, new stove. [Maintenance Department Files.]

1959

August and December. Repair loose bath tile and install rugs. [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-07 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.]

1963

June and September. Stucco basement walls and rewire. [Maintenance Department Files.]

1974

Possibly Reshingled. [Maintenance Department Files.]

1976

February 13, 1976. "Classified Structure Field Inventory Report" prepared and signed by Lance R. Williams.

1978

August and October. Window Screens and "In-O-Vent" heat saver installed. [Maintenance Department Files.]

1980-81

Storm door, solar hot water, new kitchen cabinets and counter. [Maintenance Department Files.]

1982

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

1985

July and August. Heater replaced. Installed bathroom tile.

Information partially blocked. May read: "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 30 May 1986) [Maintenance Department Files.]

1986

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

1988

January. Constructed fire-proof walls and baseboard for wood-burning stove installation. Direct cost \$452.72 (Recorded 20 Dec 1988). [Maintenance Department Files.]

1990

December 10, 1990. Remove the woodburning stove from HS-07 and put it in HS-05 where it is physically located. [Maintenance Department Files.]

1993

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

1995

Tested for Lead Based Paint. [Maintenance Department Files.]

1999

May have had some lead remediation. [Maintenance Department Files.]

Historic Photos



Figure 6. Headquarters area, ca.1926, looking north. (WICA 4163)



Figure 7. Headquarters area, Mar. 4, 1927, looking north. (WICA 188)



Figure 8. HS-05, 1929, Apr. 4, looking north. (WICA 4265)

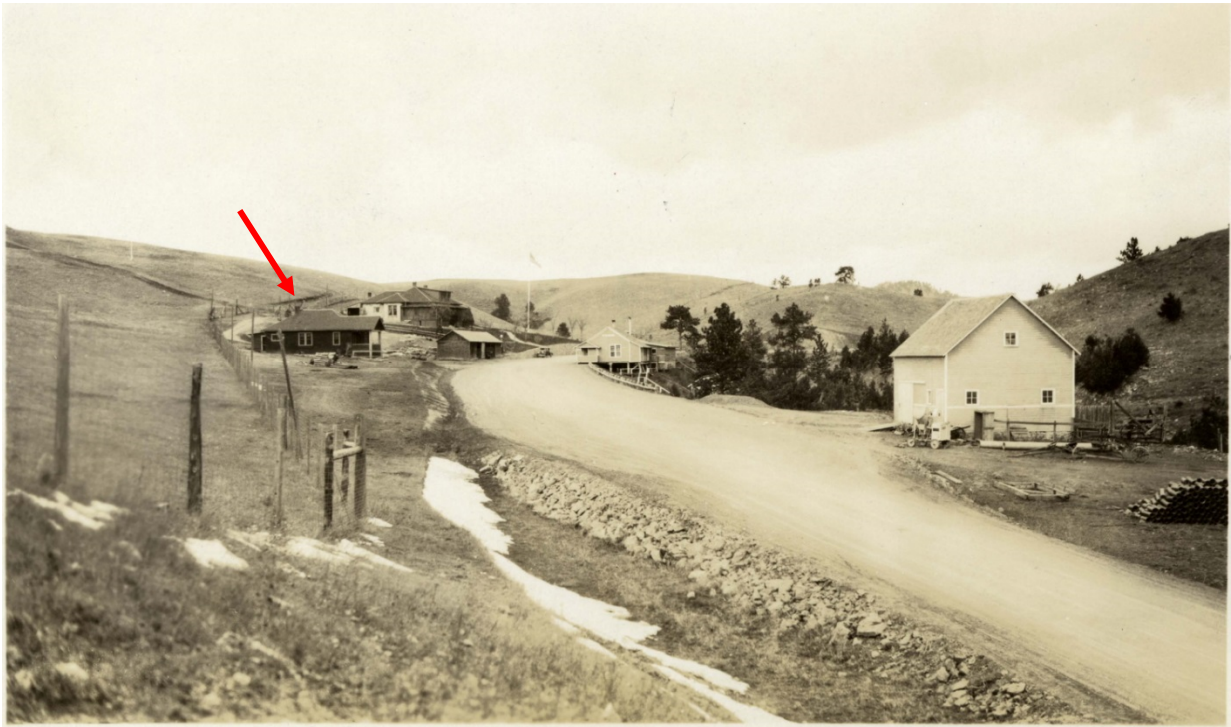


Figure 9. ca.1930s, looking north. (WICA 8687)



Figure 10. HS-05, ca.1934, looking west. (WICA 4488)



Figure 11. Nov. 10, 1934, looking south. HS-05 shortly before it was moved to its present location. (WICA 4335)



Figure 12. HS-05, ca.1935, looking southwest. (WICA 4732)



Figure 13. HS-05, ca.1935, looking north. The building has been lifted and shored to prepare for its move to a new site. (WICA 4274)

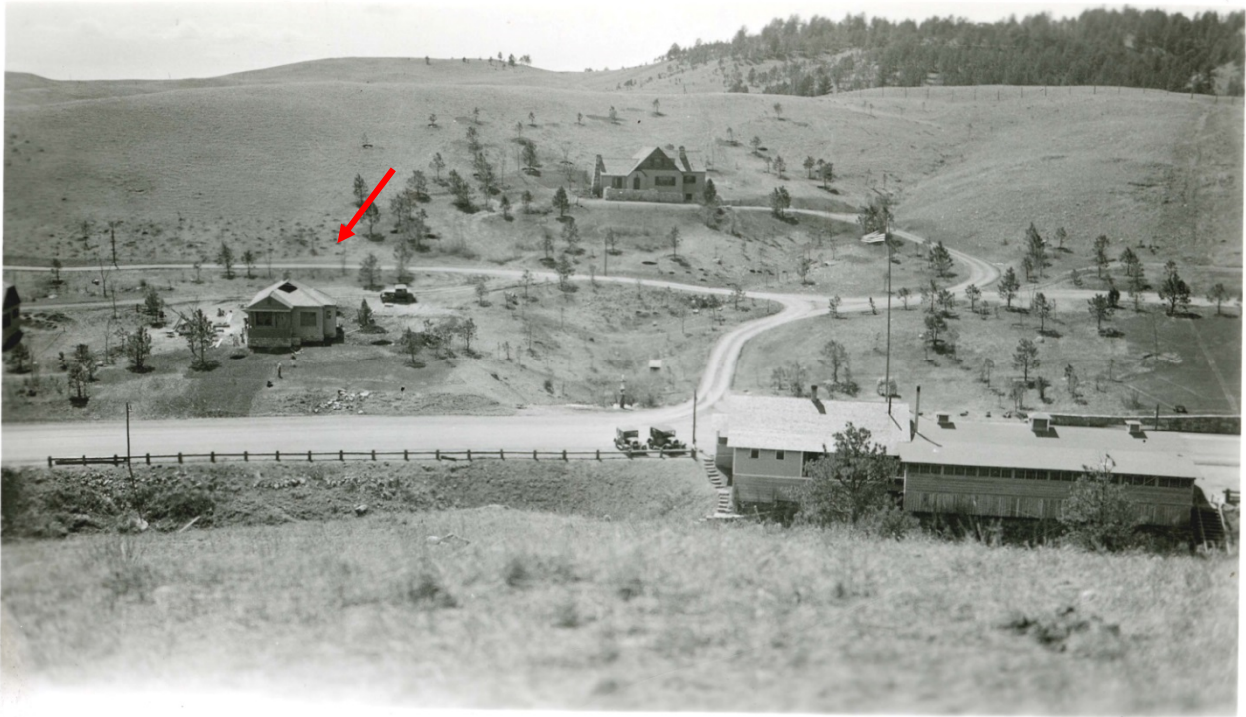


Figure 14. May, 1935, looking west. HS-05 is on the left. (WICA 4339)



Figure 15. HS-05, May 1, 1935, looking southwest. (WICA 4259)



Figure 16. HS-05, ca.1935, looking southwest. (WICA 4722)



Figure 17. HS-05, ca.1940s, looking southwest. (WICA 4272)



Figure 18. HS-05, ca.1952. Holes bored through stucco for insulation at Window 104. (WICA 4273)



Figure 19. HS-05, ca.1952. Same view, after stucco repair from insulation installation.
Figure 20. (WICA 4731)



Figure 21. HS-05, ca. 1959, Nov. 1, looking west. (WICA 6357)



Figure 22. HS-05, ca. 1969, looking east (WICA 6702)

Figure 20.



Figure 22. HS-05, ca.1970, looking west. (WICA 7116_b)



HS-05 Living Room 100 historic wall sconce. (SRJA 2014)

Existing Conditions

HS-05 Quarters Existing Conditions

Constructed in 1924, HS-05 Quarters was the earliest of the ranger cabins. When the house was moved from its original location in 1935, a partial basement and an addition to the north side of the house were added. The roof line was also changed slightly to construct the east-facing louver at the center ridge. The cabin was originally clad with wood shingles, which were removed and thus, stucco was installed to match the other 1930s housing.

The 1934 construction documents that specify these changes indicate a different plan where the west addition is constructed. It is likely that changes were made in the field during construction to reflect the existing conditions instead of the design on the documents. Refer to Appendix A for these drawings. The house barely resembles the earlier 1924 structure, having undergone such an extensive renovation.

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 northeast elevation is referred to as the north elevation (straight up on a map) and the southeast elevation is referred to as the east elevation and so forth.

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. The house is essentially hipped-roofed with a gable over the front porch and an east-facing louver at the ridge.

Roof

The potentially stained wood shingle roof, was replaced with asphalt shingles for the first time in 1982.⁵ 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.⁶ The K-style aluminum gutters and downspouts were also installed at that time. A single roof vent penetration is visible on the north-facing west side of the roof that serves the kitchen range hood exhaust (Figure X21).

Early photographs of the house before it was moved and re-roofed, show that the roof had a decorative metal ridge cap with the spherical end finials, similar to the Window House's HS-13 first roof (Figures 4, 6 and 11). After the construction of HS-13, this decorative detail was not executed on subsequent reroofing projects. The original eave overhangs with exposed rafter tails were cut back to be flush with the face of the building after the house was moved, in order

⁵ The staining of the early shingles was mentioned in the May, 1935 WICA Superintendent's Monthly Report. The date of shingle replacement is noted in maintenance files.

⁶ Maintenance Files, Letter from McCarthy Anderson to Steve Schrempp, January 16, 2002.

for the eave details to match the other houses. The ridge line was extended slightly to the south to frame the east-facing louver.



Figure R1. Valley and gutters filled with pine needles. (SRJA 2014)



Figure R2. Detail of wood shingle roof and gutter profiles. Detail of HS-05, ca. 1940s. Note the storm windows are a light color. (WICA 4272.)

Windows

The HS-05 ranger cabin, originally constructed in 1924, was moved in 1935. At that time, a major remodel occurred; including replacement of the wood siding with new Spanish stucco cladding. This renovation necessitated that the existing wood window jamb details be redesigned, as well. While some new windows were installed in the west and north additions, existing windows in the remainder of the house were retained. According to a detail provided on the 1934 drawings, the existing windows and jambs remained, but the wider 1x4 face trim on the exterior was removed and a new thinner 1 ½-inch wide 'Plaster Mould' was installed (Figure W1). This new detail provided a place for the stucco to wrap behind the trim with mastic bonding the two materials. This explains why the window sills on the original 1924 windows are so much longer than the overall window openings (Figure W2).

Two original wood double-hung 1/1 windows remain installed in the house. These include the wood window in the basement stairs (Window 107) and the window in the bathroom (Window 111). All other windows have been replaced. During a previous renovation, a majority of the wood window sashes were removed from the building and were replaced with interior aluminum single pane sashes (Figures W6 and W7). They are very similar to a storm window. These 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, Dining Room, Kitchen and Mud

Room). The 1935 exterior wood trim window surrounds are in various states of deterioration. Window trim at the front Window 102 is well protected by the front porch (Figure W3), while other trim on the house is not protected and is in deteriorated condition, with peeling paint and wood rot (Figure W4).

When completed in 1935, the wood windows were protected on the exterior with top-hung storm window sash (Figures 16 and R2). These were changed out with screened sash during the summer months. Only three original wood storm sash and one wood screened sash remain at Windows 107 (screen), 100, 108 and 114 (Figures W5 and W6). These wood storms are in fair condition, showing some signs of peeling paint and wood deterioration. The screened sash is in overall deteriorated condition, requiring a complete rehabilitation and new screen. The date for the removal of the remaining storm/screened sash is unknown. Currently, metal storm windows of varying vintage are installed on the remainder of the exterior openings. The metal storm windows are showing signs of deterioration and age and are ready for replacement.

The bedroom windows were replaced at an unknown time in the last several years (Windows 101, 110 and 113). The original wood 1/1 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. 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 W9). Also, the sills are panned, increasing the overall height of the sill (Figures W9 and W10). The panning details have open joints and are not historically appropriate for the building which 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 these windows was never finished (Figures W11 and W12).

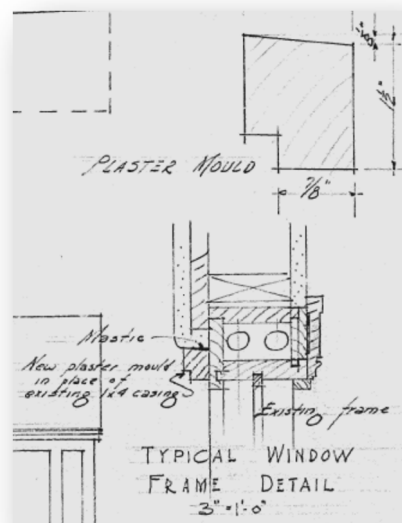


Figure W1. Detail of the 1934 construction drawings. (See Appendix A)



Figure W2. Typical mulled Window 102 with original wood trim and metal storm window. (SRJA 2015)



Figure W3. Detail typical mulled window with original wood trim and storm window at Window 102. (SRJA 2015)



Figure W4. Detail of typical window trim deterioration where the historic trim is exposed. This shows signs of many peeling paint layers and wood rot at Window 103. (SRJA 2015)



Figure W5. Photograph and detail of original top-hung wood screened sash at original wood Window 107. (SRJA 2015)



Figure W6. Detail of original top-hung storm sash at original wood Window 114. (SRJA 2015)



Figure W7. Detail of inappropriate aluminum interior replacement Window 103. (SRJA 2014)



Figure W8. Detail of inappropriate aluminum interior replacement window with exterior brown storm window at Window 103. (SRJA 2014)



Figure W9. Detail of historic wood Window 114 on the left adjacent to replacement aluminum casement Window 113 with metal panning over the trim. Note the metal trim is much thicker at the side and at the sill. (SRJA 2015)



Figure W10. Detail of aluminum replacement Window 113 metal trim and sill panning. (SRJA 2015)



Figure W11. Detail of inappropriate aluminum interior replacement Window 113. (SRJA 2014)

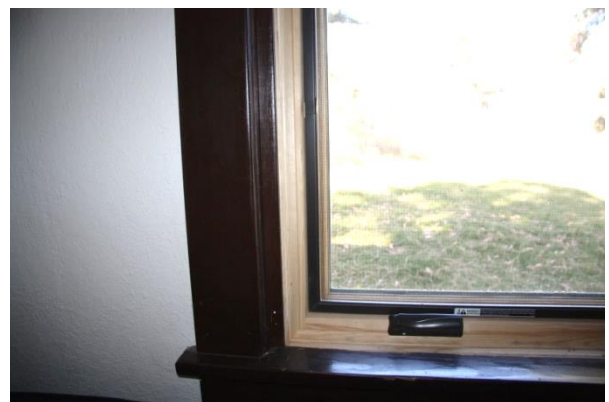


Figure W12. Detail of inappropriate aluminum interior replacement Window 113. (SRJA 2014)



Figure X1. East Elevation. (SRJA 2014)

East Elevation

The east elevation faces the Administration Building and is the primary façade of the house. 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 porch with gable roof projects forward from the house, which is topped with a hipped roof structure. The hipped roof is interrupted with a small attic louver that faces east. A small addition is set back from the face of the building and has a hipped roof that is tied in with the main roof.

The stone foundation is in good overall condition requiring only spot repointing, stone cleaning and repair of the mortar wash at the top of the wall. There are areas where the repointing mortar does not match the original historic mortar. The front steps are stone and require spot repointing. There is no handrail at the stairs, as required by current building code. The stone landing at the bottom of the steps also requires repointing.

The stucco wall cladding is in good overall condition. There are only very minor cracks that require repairs. The stuccoed porch walls are in poor condition, exhibiting horizontal cracking at the perimeter of the porch at the floor level (Figure X6). The detailing for the construction of the front porch is not shown on the construction documents. The only reference to the front porch is that a new concrete floor is specified. It is assumed that the stone foundation walls carry the concrete slab and that there is fill under the slab. The cracking may be due to minor settlement of the stone foundation walls, or it may be due to the stucco spanning two different materials at this joint (concrete slab and wood stud porch wall). The stucco may have cracked here due to expansion and contraction of the two dissimilar materials. This crack may be repaired, but will

likely re-appear, if this is the case. A close investigation of the historic photographs show this crack appeared almost exactly as it is currently configured as early as 1959 (Figure 18).

Window 100 is an original wood sash window and is covered with a wood storm window (Figure R1). The storm window is in good condition and requires only minor repair and repainting. Window 101 is a pair of mulled aluminum wood clad casement windows with exterior metal panning covering the historic wood trim.

The wood trim and horizontal wood siding in the porch gable appear to be in good overall condition, requiring only touch-up painting (Figure X5). The door frame surrounding Door 100/1 requires 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, as photographs indicate this may be covered with a wood panel on the interior. This upper wood louver is difficult to assess from grade. This louver should be further inspected on the interior to ensure it too has a screen installed to prevent animal access into the attic. The north cornice board at the porch may have been replaced with a piece of flat trim (Figure X10). It is difficult to tell since the board is covered by the gutter.

The entry Door 100/1 wood V-joint tongue and groove door with two glass lites, spaced diagonally across the door (Figures X12 and X13). This door dates to the ca. 1935 renovation. The hardware is original to the door and is manufactured by Yale and retains the original finish. The door is in very good overall condition, having been protected by the porch overhang and the storm door. The storm door is an aluminum pre-finished metal door (Figure X11). The weatherstripping at the base of the door is loose and requires either repair or replacement.

The front porch is in good overall condition, with the exception of the stucco cracking at the exterior face of the walls at the floor level. There are a few minor vertical cracks on the inside face of the porch wall, as well. The concrete floor slab is in very good overall condition, with only minor crazing. The floor is dirty and could be cleaned and have a water repellent installed. The porch walls are well below the 42-inch guardrail code requirement.

The front porch is missing the inside set of square wood columns at three locations (Figures X1 and X2). These were key character defining features of the front porch. The front porch light is currently an exposed bulb which originally had a globe glass cover (Figures 15 and 18). The porch ceiling is painted tongue and groove beaded board and is in good condition.



Figure X2. Detail of HS-05 front porch, 1935, May 1. Note the double columns on the porch.
(WICA 4259.)



Figure X3. Northeast corner of the building.
(SRJA 2014)



Figure X5. Porch gable detail. (SRJA 2015)



Figure X4. Front porch stone steps.
(SRJA 2015)



Figure X6. Porch east wall detail with cracking at floor level. (SRJA 2015)



Figure X7. Front porch floor detail. Note the integral concrete curbing at the perimeter and drainage hole through the east porch wall. (SRJA 2014)



Figure X8. Porch northeast column and wall cap deterioration. (SRJA 2015)



Figure X9. Porch southeast column and wall cap deterioration. (SRJA 2015)



Figure X10. Northeast corner of porch gable. From this angle, the wood cornice on the north side of the house appears to have been replaced with a flat trim board. This detail is not very noticeable. (SRJA 2014)



Figure X11. Door 100/1 Aluminum storm door. Note the weatherstripping at the base has become detached and requires repair or replacement. (SRJA 2014)



Figure X13. Door 100/1 hardware. (SRJA 2014)



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



Figure X14. South Elevation. (SRJA 2014)

South Elevation

The South Elevation is set into the hillside with a gentle slope from the back of the property towards the front. The stone foundation is exposed at the front porch, while grade is well above the top of the stone near the back of the property. The stone foundation is in fair condition, yet will require nearly 100% repointing. The stone requires cleaning and the mortar wash across the top of the wall requires replacement. The foundation shows several campaigns of mortar types and colors.

The grade around the house has risen near the west side of the property and is now well above the top of the stone foundation walls, in full contact with the stucco wall. This condition is not acceptable for the stucco and is not the intended detail, as indicated in the original construction documents.

The painted stucco walls are in fair condition on this wall. A large crack extends from the foundation wall to the top of the porch wall, where the main structure and the porch meet (Figure X15). The stucco is also cracked at the porch floor line (Figure X16). Previous repairs can be seen in the stucco.

The wood window trim and sills on this elevation are in deteriorated condition, with peeling paint. Small sections of stucco are missing at the transitions between the long wood sills and the vertical window trim (Figure X17). The sill of Window 104 has been wrapped with metal panning (Figure X18). The panning is not well sealed and the wood sill is exposed, indicating it

is severely deteriorated. None of the window sash on this elevation are original, having all been replaced with interior storm sash and covered with exterior storm windows.

The basement Window 001 stone areaway is covered with a stainless steel fixed cap (Figure X19). The reason for this installation is unknown, but is likely to for maintenance reasons. The plumbing vent for the kitchen sink is installed on the exterior of the building west of Window 105. This is not in keeping with the historic character of the building. The hole drilled through the wall for the pipe vent is not sealed. The west downspout is directed into a boot and daylights away from the building. The east downspout drains to grade away from the building.

The wood trim on this elevation requires painting, especially around the windows. The stone chimney is most visible from this side of the house. There appears to be two flues in the chimney. The northernmost flue has been capped and the south flue has been topped with the stainless steel downdraft flue. The pellet stove and flue are no longer used. The chimney requires stone cleaning spot repointing, mortar wash repair and potentially a new cap, if the downdraft cap is removed.



Figure X15. South Elevation crack detail at porch. (SRJA 2015)



Figure X16. South Elevation horizontal crack detail at porch floor. (SRJA 2015)



Figure X17. South Elevation detail of deteriorating wood trim at window and missing stucco at Window 106. (SRJA 2015)



Figure X18. South Elevation detail at Window 104. (SRJA 2015)



Figure X19. South Elevation basement Window 001. The exposed pipe on the left is the downspout. The painted pipe on the right is the exposed kitchen sink vent pipe. (SRJA 2015)



Figure X20. South Elevation chimney detail. (SRJA 2015)



Figure X21. West Elevation. (SRJA 2015)

West Elevation

The West Elevation of the house faces the upper rear road. The road is several feet above the finish floor of the house. The house and road are separated by a stone retaining wall and in-grade concrete steps (Figures X22 – X25). The stone walls at the steps appear to be in good overall condition, requiring only spot repointing and cleaning. The concrete steps are in good condition. A concrete slab spans the area between the retaining walls and the house. This concrete slab is set well above the top of the stone foundation, in full contact with the stucco wall. There is not a soft joint between the concrete and the stucco wall. There are two drains in the concrete slab – one at the south end and another at the north end (Figures X25 and X28).

The west wall of the house is clad in stucco. The stucco has a lot of crazing near the concrete patio surface (Figure X26). This is either due to moisture in the stucco or from expansion and contraction of the concrete slab against the stucco wall. A large crack extends from the top left of Door 103/1 to the eave (Figure X27). Door 103/1 is the back door of the house and is protected by an aluminum storm door. The storm door is in good overall condition with the exposed wood frame requiring painting. The light fixture above the door is missing its glass shade. Window 107 is discussed in the Window section above. This is one of the few remaining historic wood 1/1 double-hung windows. It is currently covered by a deteriorated screened sash. The wood window sash, frame and screened sash require restoration. The electrical service enters the building at this side of the house. The lines are overhead and enter a weatherhead above the roof line. The meter is mounted on the west wall, just south of Door 103/1. The service enters the building just below grade. The concrete sidewalk had to be formed around the service entry, due to it being slightly below grade.

Window 109 is a west-facing window, which has been replaced with an aluminum wood clad casement egress window (Figure X29). The trim is panned on the exterior with pre-finished metal. The stucco grade in this corner of the building is well above the stone foundation and is in full contact with the stucco cladding. The stucco along the bottom of this wall exhibits crazing and paint loss due to the moisture infiltration. Window 112 is also a west-facing window, which has also been replaced with a new aluminum wood clad casement egress window. The trim is panned on the exterior with pre-finished metal. There is a spot below the window on the wall that requires painting.



Figure X22. West Elevation. (SRJA 2015)



Figure X24. West Elevation. (SRJA 2015)



Figure X23. West Elevation. (SRJA 2015)



Figure X25. West Elevation. (SRJA 2015)



Figure X26. West Elevation detail at sidewalk and stucco wall. (SRJA 2015)



Figure X28. West Elevation detail at south side of concrete patio. (SRJA 2015)



Figure X27. West Elevation detail at door. (SRJA 2015)



Figure X29. West Elevation Window 109. (SRJA 2015)



Figure X30. North Elevation. (SRJA 2015)

North Elevation

The North Elevation of the building is one story. The stone foundation is exposed at the east side, and is either level with or well above the top of the stone foundation about mid-way across the elevation towards the west side. The cross slope of the grade from north-south is almost more pronounced at this elevation than the east-west slope (Figure X30). The grade drains directly into the north foundation wall. There is not adequate swale to prevent water from coming into contact with the stucco walls near the west side of the house.



Figure X31. North Elevation of house looking west at north-south grad cross-slope towards house. (SRJA 2015)

Window 108 is an original fixed wood sash and is clad with an original wood storm window (Figure X32). The wood storm window is deteriorated and requires restoration. Window 110 is an aluminum clad wood replacement casement window. The exterior wood trim and sill is clad with metal panning (Figure X33). Window 111 is an original wood double-hung window that is clad with a metal storm window. Windows 112 and 113 (Figure W9) are aluminum casement replacement windows with the exterior trim clad with metal panning, matching the detailing of Window 110. Window 114 is an original fixed wood sash with an original wood storm window (Figure W9). The wood storm window is deteriorated and requires restoration.

Stucco near Window 110 and 108 is in direct contact with grade and is wicking moisture, causing significant crazing in the stucco and some paint loss. The grade is too high at the west side of the house. There are several other small stucco cracks throughout this elevation. A telephone utility box is mounted to the west side of Window 110 and a hose bib is located in the wall below the window. The basement Window 002 stone areaway is covered with a stainless steel fixed cap. The reason for this is unknown. The vent pipe for the bathroom sink is mounted on the face of the exterior wall in the corner between Windows 111 and 112. This is not in keeping with the historic character of the building. The hole drilled through the wall is not sealed. The west downspout is directed into a boot that daylights away from the building. The discharge for this line was not observed. The east downspout drains to grade away from the building.

The exposed stone foundation near the east side of this elevation is in fair condition, requiring spot repointing, cleaning and mortar wash replacement. The corner stone in the northeast corner of the north addition appears to be rotating slightly outward. A vertical crack extends through the mortar joints in the foundation wall just left of the foundation vent near this corner (Figure X34). This crack requires repointing. It should be monitored for future movement. The foundation vent located in this area is in good condition and the screen is intact. This is the only foundation vent in the crawl space.



Figure X32. North Elevation Window 108. Note the grade is above the top of the stone foundation wall (SRJA 2015)



Figure X33. North Elevation Window 110 sill panning detail. (SRJA 2015)



Figure X34. North Elevation crack detail east of foundation vent. (SRJA 2015)

Existing Conditions - Interior

Basement 001

The basement is one large space of approximately 484 net square feet (Figures B-1 – B-7). On the 1934 construction drawings, the basement was indicated to be much smaller than the existing configuration (around 200 net square feet). The relocation of the house to its current foundation and its remodeling were completed in 1935. A little over a year later, in September 1936, a Superintendent's Monthly Report mentions, "a small basement excavated under clerk's residence and Arcola heating system moved from back porch into basement. Allows for better efficiency and more room on back porch."⁷ It is possible that the basement was enlarged to accommodate the heating system at this time. There is no clear record of this work.

The basement is currently under the west portion of the house and ends approximately where the Dining Room east wall is located above. The ceiling height to the bottom of the first floor joists is 7'-8.5." The walls are plastered over the concrete and stone foundation walls and the floor is a concrete slab on grade. There are many minor cracks in the basement slab and several repairs have been made and areas infilled over time. A brick chimney stands in the center of the basement and has two flue thimbles that have been covered. The exposed girder and posts centered east-west in the basement are discussed in the Structural Section of this report.

Two windows are located in the basement – one centered on the south wall and a second on the north wall. These small 3-lite awning windows look into stone areaways. These have been permanently sealed on the exterior with stainless steel covers. In the original 1934 construction drawings, both of these openings were labeled as foundation vents. They were either built as windows in their existing condition or when the basement was further excavated, these were changed to windows.

The electrical panel is located on the west wall. The water service enters the building through the north wall. A wall heater is mounted to the south wall. The basement appears to be dry. Exposed piping for the bathroom and kitchen above is installed along the north and south walls. Lighting is provided by four overhead globe flush mount fixtures.

A very small access that peers into the east Crawl Space 002 was found when some insulation was removed from the first floor joists near the east foundation wall (Figure B-7). When the insulation was removed, charred floor joists were found. The old furnace was located in this location, which may have caused this burning of the joists. The joist appear to be sound, and this condition is further discussed in the Structural section of this report. This small access hole into the crawl space was barely large enough to get a camera into, but several photographs were taken. One photograph was taken facing south along the edge of the foundation wall and shows the back side of an infilled crawl space access that once existed in this east wall (Figure

⁷ WICA Superintendent's Monthly Report, October, 1936.

B-8). This was likely used to install the forced air HVAC system that is no longer utilized, as well as for the installation of wiring. There is no record of why this opening was infilled (Figure B-9). No other apparent access for maintenance in the crawl space was found. Crawl Space 004 only contains a single foundation vent in the north wall. There is no insulation at the first floor joists in the crawl space.



Figure B-1. Basement Looking northeast.
(SRJA 2014)



Figure B-4. Basement Looking southeast.
(SRJA 2014)



Figure B-2. Basement Looking north.
(SRJA 2014)



Figure B-5. Basement Looking south.
(SRJA 2014)



Figure B-3. Basement Looking east.
(SRJA 2014)



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



The red arrow points to the small access hole in the floor framing above the east basement foundation wall.

The wood in this area is charred from a previous fire but is structurally sound.

Figure B-7. Basement 001 east foundation wall looking at access hole to Crawl Space 002. (SRJA 2014)



The red arrow points to old crawl space access that has been infilled and plastered over on the interior. This is just south of the existing small access hole.

Figure B-8. Crawl Space 002 Looking south along back side of foundation wall. (SRJA 2014)



Figure B-9. Crawl Space 002 Looking east.
(SRJA 2014)



Figure B-10. Basement 001 Looking south and east. The red arrow points to where there used to be a larger crawl space access that has been infilled. (SRJA 2014)

First Floor

The first floor is approximately 1,056 gross square feet and has nine total rooms, plus closets. The first floor is in nearly original 1935 condition with no major alterations. Remodeling of the house has focused on finishes and the bathroom and kitchen. Lead based paint testing was completed in 1993, but it is unclear if any lead paint abatement was undertaken.⁸

Millwork

The interior millwork throughout the house appears to date to both the original 1924 and later 1935 renovation (Figures 1-1 – 1-4). The rooms have a flat stock, simple stained pine baseboard with no profile. The door and window trim are also flat stock dark stained pine with no decorative profiling. The trim at the top of the doors and windows slightly overlays the edge trim by approximately 3/8-inch. Doors have a tall flat stock plinth with an eased front edge. A dark stained picture molding lines the top perimeter of some of the rooms.



Figure 1-1. Typical Window millwork.
(SRJA 2014)

⁸ Maintenance Department Files.



Figure 1-2. Typical window millwork detail (Window 110). (SRJA 2014)



Figure 1-3. Typical door and window head millwork detail. (SRJA 2014)

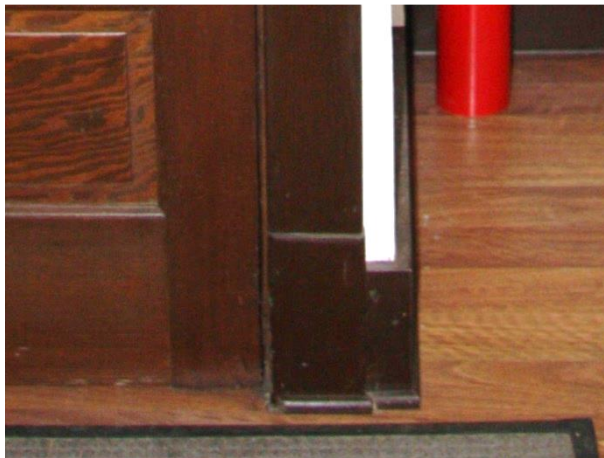


Figure 1-4. Typical door plinth and baseboard. This baseboard has a shoe molding. (SRJA 2014)

Living Room 100

The Living Room also serves as the front entry into the house from the porch (Figures 1-5 – 1-11). The room is 14'-5" by 11'-4" with a ceiling height of 8'-9 1/2." A stained picture molding at 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 millwork was not taped when it was last stained, as the stain is visible on the perimeter white wall paint. The walls and

ceiling are painted plaster. There are several diagonal cracks along the ceiling that have been previously repaired. A large horizontal crack at the Opening 100/2 outlines where a larger squared opening was originally located before the arched opening was constructed (Figures 1-8 and 1-9). The floor is carpeted over an unknown wood substrate. A pair of matching decorative candle type historic wall sconces are installed on the north wall (Figures 1-5 and 1-11). Both Windows 102 and 103 have metal replacement sash that are not historically appropriate or energy efficient. Baseboard heaters are installed along the east and south walls near the windows.



Figure 1-5. Living Room 100 looking at north and east walls. (SRJA 2014)



Figure 1-6. Living Room 100 looking at east wall. (SRJA 2014)



Figure 1-7. Living Room 100 looking at south wall. (SRJA 2014)



Figure 1-8. Living Room 100 looking at west wall towards the Dining Room. (SRJA 2014)



Figure 1-9. Living Room 100 looking at crack in wall above Door 100/2. (SRJA 2014)



Figure 1-10. Living Room 100 looking at cracks in ceiling. (SRJA 2014)



Figure 1-11. Living Room 100 wall sconce detail. (SRJA 2014)

Dining Room 101

The Dining Room is centrally located in the house and is accessed by the front Living Room to the east, the Kitchen to the west and Hall 105 to the north (Figures 1-12 – 1-15).

The room is 10'-4" by 11'-4" with a ceiling height of 8'-10." A stained baseboard lines the perimeter of the room. Millwork installed on the doors and windows matches other millwork throughout the house. The walls and ceiling are painted plaster. The floors are wood laminate and are in good condition. A central ceiling fan provides light in the room. A pellet heating stove was installed in the northwest corner of the room in 1988 and has stone wall surrounds and a raised stone base. The stove is disconnected from the chimney flue and is no longer used. Window 104 is a wood-mulled pair of metal replacement sash that are not historically appropriate or energy efficient. A baseboard heater is installed under the window.



Figure 1-12. Dining Room 101 north wall. (SRJA 2014)



Figure 1-13. Dining Room 101 east wall. (SRJA 2014)



Figure 1-14. Dining Room 101 south wall. (SRJA 2014)



Figure 1-15. Dining Room 101 east wall. Note the flue is disconnected from the pellet stove and is covered. (SRJA 2014)

Kitchen 102

The Kitchen 102 is located near the rear of the house. This room was remodeled in 1980-81 with new cabinets and countertops. The room is accessed from the Dining Room to the east and the Mud Room to the west. The room is 9'-7" x 11'-4" with a ceiling height of 8'-10." The twin flue brick chimney, constructed in 1935, is located in the northeast corner of the room and is plastered. The walls and ceiling are plaster. The floor is wood laminate. The Door 101/2 that separated the Kitchen and Dining Room has been removed from its pivoting hinge and the cased opening remains. Millwork installed at the doors, windows and baseboard matches other millwork throughout the house.

The cooking stove is located along the north wall with an exhaust hood that vents through the roof. The sink is centered at Window 105. This window is a metal replacement sash that is not historically appropriate or energy efficient. The original window configuration for this location is not known. This may have been a bypass sliding window or an early casement. A wall unit heater is installed in the west wall. The room is lit by a central flush mount fixture that appears to date to the 1930s renovation and a light fixture mounted in the bottom of the cabinet above the sink. The light has paint all around the chrome ring at the top from ceiling overpaint. A thimble in the chimney flue behind the refrigerator once provided exhaust for a cooking stove.



Figure 1-16. Kitchen 102 east wall. (SRJA 2014)



Figure 1-18. Kitchen 102 west wall.
(SRJA 2014)



Figure 1-17. Kitchen 102 south wall looking at
Window 105. (SRJA 2014)

Mud Room 103

The Mud Room 103 serves as the back entry into the house (Figures 1-19 – 1-23). The room is approximately 6'-0" by 8'-2" with a ceiling height of 8'-10 3/4." This room is accessed through an arched plaster Opening 102/1 from the Kitchen to the east or from the back Door 103/1. In the 1934 construction documents, this room was not designed to have the current floor plan configuration. Changes during construction must have been made to accommodate the current plan, as the finishes and detailing are consistent with the rest of the house. Door 103/2 leads to the enclosed basement Stair 104, located in the northwest corner of this space. The north and south sides of the room are divided with an overhead plastered arch. A built-in cabinet with an arched opening is tucked into the north wall adjacent to the basement door.

The walls and ceiling are plaster. The flooring is wood laminate. Millwork installed at the doors, windows and baseboard matches other millwork throughout the house. Door 103/1 is the exterior entry door and is pine, and is not original to the early construction of the house. The bottom of the door appears to be weatherstripped. Door 103/2 to the basement is an original

1935 horizontal 5-paneled door with original hardware. The hardware is very simple, with a rectangular beveled edge backplate and round knob. Hinges are ball-tipped and face-mounted. Window 106 has replacement metal sash where there was once a 1/1 wood double-hung window. Light in the south portion of the space is provided by an early hand-painted glass shade fixture (Figure 1-23). The fixture base is covered in paint. Light in the north portion of the room is provided by a flush mount fixture with a glass globe. The vintage of this fixture is unknown. Washer and dryer hook-ups and venting are installed in the southeast corner of the room. A baseboard heater is installed along the west wall.



Figure 1-19. Mud Room 103 north wall.
(SRJA 2014)



Figure 1-21. Mud Room 103 south and west walls.
(SRJA 2014)



Figure 1-20. Mud Room 103 east wall.
(SRJA 2014)



Figure 1-22. Mud Room 103 west wall.
(SRJA 2014)



Figure 1-23. Mud Room 103 light fixture detail. (SRJA 2014)

Stair 104

A narrow and steep winding wood staircase with wood treads leads to the basement (Figures 1-24 – 1-29). There is no landing at the door. Window 107 is located in the west wall. This is one of two original ca. 1935 wood double-hung windows remaining in the house. The window appears to be in good condition on the interior, with a lot of overpaint on the glass. The walls and ceiling are plaster. The foundation wall is also plastered.

The existing stair does not meet current residential code for rise/run, headroom at the stair turn or handrail/guardrail installation.



Figure 1-24. Stair 104 Looking north. (SRJA 2014)



Figure 1-25. Stair 104 Detail looking south. (SRJA 2014)



Figure 1-26. Stair 104 Window 107. One of two original 1/1 double-hung wood windows in the house. (SRJA 2014)



Figure 1-28. Stair 104 Handrail detail. (SRJA 2014)



Figure 1-27. Stair 104 west wall. Note the old fuse panel that is no longer used. (SRJA 2014)



Figure 1-29. Stair 104 from basement. (SRJA 2015)

Hall 105

Hall 105 is entered from the Dining Room and is used to access the bedrooms and bathroom (Figures 1-30 – 1-32). The hall is approximately 15'-5" by 3'-5" and has a framed beaded board panel for attic access in the east side of the ceiling. The walls and ceiling are painted plaster. The floor is wood laminate. Installation of the wood laminate at the door openings has left open gaps with the older floor below viewable (Figure 1-32). Millwork installed at the doors, windows and baseboard matches other millwork throughout the house. The doors are all horizontal recessed 5-panel with original brass hardware, matching the hardware on Door 103/2. Light is provided by a single flush mount fixture in the center of the ceiling. A smoke detector is mounted on the ceiling outside of the bedroom doors.



Figure 1-30. Hall 105 Looking east. (SRJA 2014)



Figure 1-31. Hall 105 Looking west. (SRJA 2014)



Figure 1-32. Hall 105 Wood laminate floor and threshold installation details. (SRJA 2014)

Bedroom 106

Bedroom 106 is the eastern-most bedroom (Figures 1-33 – 1-37). This room is approximately 8'-9" by 11'-4." A small closet with a rod, shelf and a small fixed wood window, is located on the north side of the room. The walls and ceiling are painted plaster. Flooring is carpet over an unknown wood substrate. Millwork installed at the doors, windows and baseboard matches other millwork throughout the house. A dark stained picture molding lines the room approximately 8-inches below the ceiling. Light is provided by a flush mount ceiling fixture. Window 102 is a mulled pair of aluminum clad wood casement replacement windows. These windows were installed and the interior wood staining was not completed. A baseboard heater in installed under the window (Figure 1-35). This room has some minor cracking in the plaster ceiling. A smoke detector is installed near the door.



Figure 1-33. Bedroom 106 Looking north and east. (SRJA 2014)



Figure 1-34. Bedroom 106 Looking east. Note the staining on the wall above the baseboard heater. (SRJA 2014)



Figure 1-35. Bedroom 106 Looking south. (SRJA 2014)



Figure 1-36. Bedroom 106 Closet looking north. (SRJA 2014)



Figure 1-37. Bedroom 106 Light. (HEI 2015)

Bedroom 107

Bedroom 107 is the central bedroom (Figures 1-38 – 1-41). This room is approximately 9'-2" by 11'-6." A small closet with a rod, shelf and a small fixed wood window, is located in the northeast corner of the room. The walls and ceiling are painted plaster. Flooring is carpet over an unknown wood substrate. Millwork installed at the doors, windows and baseboard matches other millwork throughout the house. Light is provided by a flush mount ceiling fixture. Window 112 is a single and Window 113 is a mulled pair of aluminum clad wood casement replacement windows. These windows were installed and the interior wood staining was not completed (Figures W12 and W12). A baseboard heater is installed under the window. This room has some minor cracking in the plaster ceiling. A smoke detector is installed near the door.



Figure 1-38. Bedroom 107 Looking north.
(SRJA 2014)



Figure 1-40. Bedroom 107 Looking west.
(SRJA 2014)



Figure 1-39. Bedroom 107 Looking south and
west. (SRJA 2014)

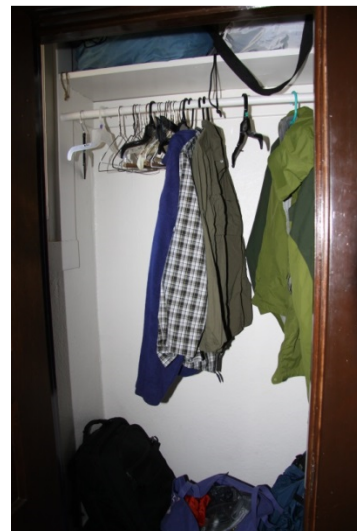


Figure 1-41. Bedroom 107 Closet. (SRJA 2014)

Bathroom 108

Bathroom 108 has no historic features except for the original room size and the remaining 1/1 wood double-hung Window 111. The room is approximately 6'-0" by 7'-7" with a ceiling height of 8'-7." All finishes and fixtures date to renovations in the 1970s or 1980s. There is a toilet, tub/shower and vanity with a sink. The room is lit by a wall sconce at the sink and a flush mount fixture near the shower. An exhaust fan is centered in the room. A baseboard heater is installed along the east wall. The millwork in this room matches the other millwork installed in the house, except that it is painted white. The shower caulking is deteriorated and requires new installation. The bathroom is outdated yet functional.



Figure 1-42. Bathroom 108 Looking north.
(SRJA 2014)



Figure 1-43. Bathroom 108 Looking west.
(SRJA 2014)



Figure 1-44. Bathroom 108 Looking south. (SRJA 2014)

Bedroom 109

Bedroom 109 is the western-most bedroom (Figures 1-45 – 1-50). This room is approximately 10'-5" by 11'-9." A small closet with a rod, shelf and a small fixed wood window, is located in the southwest corner of the room. The walls and ceiling are painted plaster. Flooring is carpet over an unknown wood substrate. Millwork installed at the doors, windows and baseboard matches other millwork throughout the house. A dark stained picture molding lines the room approximately 8-inches below the ceiling. Light is provided by a flush mount ceiling fixture, which is missing its shade. Window 109 and Window 110 are aluminum clad wood casement replacement windows. These windows were installed and the interior wood staining was not completed. A baseboard heater is installed under the west window. This room has some minor cracking in the plaster ceiling. A smoke detector is installed near the door.



Figure 1-45. Bedroom 109 Looking north.
(SRJA 2014)



Figure 1-48. Bedroom 109 Looking west.
(SRJA 2014)



Figure 1-46. Bedroom 109 Looking east.
(SRJA 2014)



Figure 1-49. Closet 109A Looking north.
(SRJA 2014)



Figure 1-47. Bedroom 109 Looking south.
(SRJA 2014)



Figure 1-50. Closet 109A Looking west.
(SRJA 2014)

Existing Conditions - Structural

HS-05 is a single story wood framed structure, originally constructed in 1924 and moved to its current location, expanded and renovated in 1935. The building rests on with shallow foundations. There is a basement area on the west side of the building and a crawl space on the east side.

Construction drawings dated August 17, 1934 titled "Alterations & Additions to Employees Residence" show two small additions (Appendix A). One on the north elevation and one on the west elevation. A new basement is identified on the drawings.

The north addition expanded Room 107 and added Closets 107A and 106A. The west addition included Room 103, Stair 104 and Closet 109A.

The drawings identify the building as a residence. Its current usage is consistent with this identification.

Basement 001

The basement is accessed by a stair from Room 103. There are two wood girders spanning east-west approximately in the middle of Room 001. The girders consist of four plies of 1-3/4" x 7" members. The girder supports 2 x 12 floor joists spaced at 16 inches on center.

The east girder spans from a brick haunch built into the chimney eastward to a 6 x 6 (nominal) timber post. The post is located adjacent to the foundation wall at the transition from the basement to the crawl space. The timber post bears directly on the slab on grade. There is a 2-1/2-inch diameter steel post that cuts the girder span in half. The steel post is buried in the slab-on-grade (Figure S1). It is unknown if there is a footing beneath the steel post.

The west girder is supported on the east end by the chimney brick haunch and spans westward to a timber post (Figures S2 and S3). The timber post bears on a small, roughly 6" x 6" (actual) concrete pilaster. The girder cantilevers past the west most timber post (Figure S4). The girders and posts appear to be functioning adequately at this time.

Along the east side of the basement some of the first floor joists were charred from a previous fire. Observation of the joists was limited due to the presence of insulation. Based on limited observation the depth of the charred was minimal and does not represent a significant loss in cross section of the members.



Figure S1. Timber post on slab-on-grade, steel post buried in concrete. (SEA 2015)



Figure S3. Girders bearing on chimney haunch. (SEA 2015)



Figure S2. West girder in basement. (SEA 2015)



Figure S4. Post bearing on pilaster, girder cantilevers past post. (SEA 2015)

Crawl Space

The crawl space could not be accessed at the time of the site visit. Several photographs were taken through a small opening in a notch in the first floor joist between the basement and crawl space, but there was not enough information captured to assess the structure in this portion of the house.

First Floor

The first floor is a finished space. Cracks were present through the wall and ceiling finish material at a few locations. Cracks were present over Door 100/2 (Figure S5). In its current configuration the top of the door is an arch. The crack appears to follow the outline of an original rectangular door opening. The crack does not appear to be consistent with structural concerns.

There is a crack over Door 109/1 (Figure S6). Cracks are present in the ceiling of Living Room 100 (Figure S7).



Figure S5. Crack over Door 100/2. (SEA 2015)



Figure S6. Crack over Door 109/1. (SEA 2015)



Figure S7. Crack in ceiling of room 100. (SEA 2015)

Attic

The attic is constructed of 2 x 6 (nominal) ceiling joists at 16-inches on center. The roof framing consists of 2 x 6 (nominal) roof rafters spaced at 24-inches on center with 2 x 6 (nominal) hip rafters. The roof framing appears to be in acceptable condition with no significant signs of distress or deterioration observed.

Over Room 100 there are two 1x members that support the end of a hip rafter (Figure S8). The 1x member bears on the ceiling joists of Room 100. These 1x members are adding load to the ceiling joists resulting in the joist deflecting and cracking the ceiling plaster.



Figure S8. 1x members supporting hip rafter. (SEA 2015)

Exterior Walls and Foundations

Cracks are present in the exterior stucco and stone foundation walls. One crack is located on the south elevation between the east porch and the main building structure (Figure S9). The crack runs through the foundation wall and upward through the exterior stucco finish.

A second crack is present on the north elevation outside of Closet 106A (Figure S10). This is in the north addition area. This crack is present in the stone but does not migrate up into the stucco finish.



Figure S9. Crack in south wall. (SEA 2015)



Figure S10. Crack in foundation, north elevation. (SEA 2015)

Existing Conditions - Mechanical, Electrical and Plumbing



Figure MEP01. Residence – HS-05. (SRJA 2014)

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 primarily used as summer seasonal staff housing, but it is occasionally used during the transition seasons.

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, three 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

An electric baseboard heating system (Figure M01) was installed throughout the house during a remodel that took place in the 1980s. An abandoned pellet burning stove (Figure M02, Figure M03, and Figure M04) is currently in Dining Room 101. The flue routed from the pellet burner has been removed and capped at the penetration to the fireplace.

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.

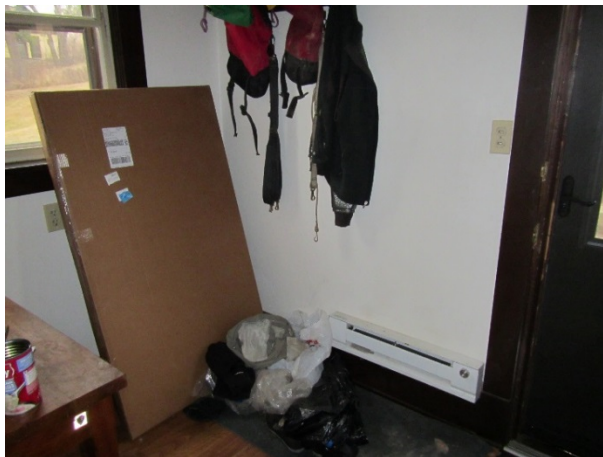


Figure M01. Example of electric baseboard heaters in Mud Room 103. (HEI 2015)



Figure M02. Dining Room 102, Pellet burner and capped flue. (HEI 2015)



Figure M03. Pellet burner thermostat in Living Room 100. (HEI 2015)



Figure M04. Pellet burner flue termination.
(HEI 2015)

This building does not have a cooling system or a forced air system installed. A ceiling fan is installed Dining Room 101 for general air circulation (Figure M05).



Figure M05. Ceiling fan in Dining Room 101. (HEI 2015)

An exhaust hood is located above the stove in the Kitchen 102 and is ducted to the exterior through the roof (Figure M06).



Figure M06. Kitchen 102, Exhaust hood and termination. (HEI 2015)

Mud Room 103 has a dryer vent that terminates on the south exterior wall with a wall hood (Figure M07).



Figure M07. Mud Room 107, Dryer vent and termination. (HEI 2015)

Bathroom 108 has an existing ceiling mounted exhaust fan. It discharges exhaust air into the attic space (Figure M08). 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 M08. Bathroom – 108, Exhaust fan and termination. (HEI 2015)

A wall mounted electric heater (Figure M09) serves the Kitchen 102.



Figure M09. Electric heater in Kitchen 102. (HEI 2015)

A wall mounted electric heater (Figure M10) serves the Basement 001.

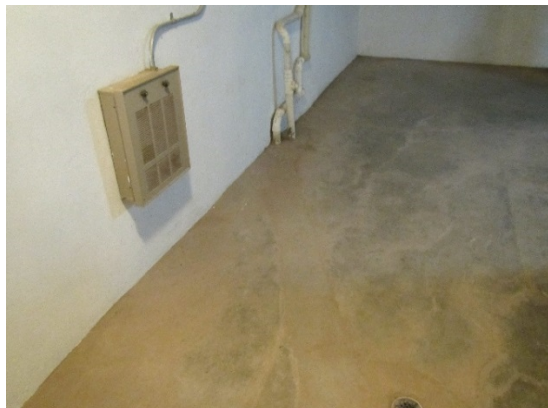


Figure M10. Electric heater in Basement 001. (HEI 2015)

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 P01 and Figure P03). 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 northwest corner of Basement 001. A water shutoff valve is located exterior to the building (Figure P02).



Figure P01. Shutoff valves, irrigation vacuum breaker, and sanitary sewer cleanout. (HEI 2015)



Figure P02. Exterior shutoff valve for water system. (HEI 2015)



Figure P03. 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) 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, Mud Room 107, and an exterior hose bibb (Figure P04).

A ¾-inch copper domestic water line enters the building through the basement wall in the northwest corner of Basement 001 (Figure P06). The domestic water goes to a domestic water meter, located in the corner of this room.



Figure P04. Wall hydrant. (SRJA 2014)



Figure P05. Domestic electric water heater in Basement 001. (HEI 2015)



Figure P06. Domestic water entry in Basement 001. (HEI 2015)

The water then exits the meter to serve the building plumbing fixtures. All domestic water piping downstream of the copper water entry is cross-linked polyethylene (PEX) with brass fittings (Figure P08). 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 P08). 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 P07). 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 P07. Sanitary sewer cleanout in east yard. (HEI 2015)



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

Plumbing fixtures are vented through a vent system that is routed from the basement, out the exterior wall at approximately 5-inch above grade, and then routed up vertically along the exterior wall (Figure P08). The vent pipes then terminate with insect screen a few inches below the roof soffit (Figure P08). These pipes are not insulated. The venting system does not appear to be code compliant. Refer to treatment recommendations section for additional information on vents.



Figure P08. Example of exterior vent piping. (HEI 2015)

The Kitchen 104 has a two-compartment stainless steel sink (Figure P09). Mud Room 103 has washing machine connections for hot water, cold water, and drain (Figure P10).



Figure P09. Stainless steel two-compartment sink in Kitchen 104.
(HEI 2015)

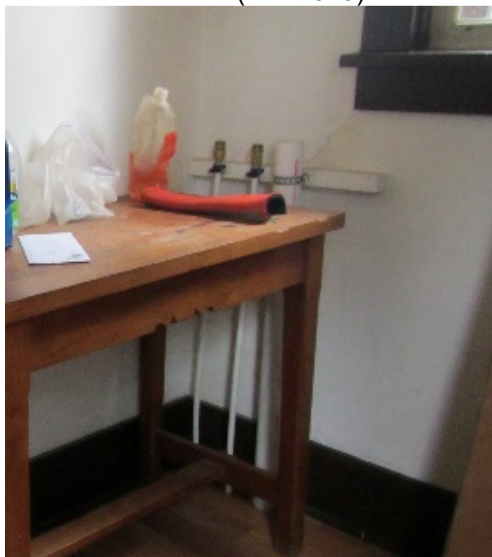


Figure P10. Washing machine connections in Mud Room 103.
(HEI 2015) Bathroom 108 has a counter mounted lavatory, white vitreous china water closet, and a molded fiberglass tub (Figure P11 and Figure P12).



Figure P11. Lavatory and water closet in Bathroom 108. (HEI 2015)



Figure P12. Shower in Bathroom 108. (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 P13).



Figure P13. Example of gutter and downspout systems. (HEI 2015)

Electrical and Lighting Systems

The electrical service to the property is supplied by 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 electrical service on the secondary side of the transformer is 240/120V, single phase, three wire. The service conductors extend overhead along the service road to a power pole located west of the HS-05 house. The service conductors from the power pole are routed overhead to a weatherhead located on the west side of the house and then in conduit to a meter on the exterior of the house (Figure E01). The meter is an Elster digital meter (Figure E02). From the meter the conduit goes underground and terminates in the electrical service panel.

The electrical service panelboard is located on the west wall of Basement 001 (Figure E03). It is a 225A, 42-pole, 240/120V single phase, 3-wire panel with a 225A main circuit breaker (Figure E04). 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 E01. Service conductors at weatherhead on the west side of the house. (HEI 2015)



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



Figure E03. Electrical service panelboard located in Basement 001. (HEI 2015)



Figure E04. Electrical panel located in Basement 001. (HEI 2015)

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 panel 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). 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 sconce light with a bare compact fluorescent screw base lamp mounted above the door. It appears to be missing a glass globe. The front porch has a screw base fixture with blue incandescent lamp mounted in the center of the ceiling that lights the porch and east exterior door. The exterior lighting is controlled by a toggle switch located on the interior side of the rear door.

Basement 001 has four glass globe incandescent fixtures with A19 screw base lamps. The closest fixture to the stairs is controlled by a toggle switch located at the top of the stairs. The rest of the fixtures are controlled with pull chains. (Figure E05).

Living Room 100 has two historic incandescent candle fixtures with screw base compact fluorescent lamps mounted on the north wall (Figure E06). They are controlled by a toggle switch.

Dining Room 101 has a five-blade ceiling fan with a three-lamp glass shade light kit and screw base compact fluorescent and incandescent lamps (Figures E07). It is controlled by a toggle switch.

Kitchen 102 has a vintage glass globe fixture with two incandescent lamps (Figure E08) and a recessed light above the sink (Figure E09). Both fixtures are controlled individually by toggle switches.



Figure E05. Light Fixture located in Basement 001. (HEI 2015)



Figure E06. Light fixture located in Living Room 100. (SRJA 2014)



Figure E07. Ceiling fan located in Dining Room 101. (HEI 2015)



Figure E08. Light fixture located in Kitchen 102. (SRJA 2014)



Figure E09. Light fixture located above the sink in Kitchen 102. (HEI 2015)

Mud Room 103 has a glass globe incandescent fixture mounted in the center of the room similar to the fixtures found in the basement (Figure E05). It also has a vintage glass shade lamp in the laundry area with a screw base compact fluorescent lamp (Figure E10).

Hall 105 has a vintage glass globe fixture with two incandescent lamps similar to the kitchen light fixture (Figure E08). It is controlled by a toggle switch.

Bedrooms 106, 107, and 109 each have a single vintage square glass incandescent fixture with two screw base compact fluorescent lamps (Figure E11). The light fixture in Bedroom 109 is missing the square glass cover.



Figure E10. Light fixture located above the laundry area in Mud Room 103. (SRJA 2014)



Figure E11. Light fixture located in Bedrooms 106, 107, and 109. (HEI 2015)

Bathroom 108 has a ceiling mounted incandescent dome light with frosted glass (Figure E12) and a decorative two-glass shade incandescent bathroom sconce (Figure E13) with screw base compact fluorescent lamps. The ceiling mounted dome light is controlled with a toggle switch located outside of the bathroom next to the door. The decorative sconce is controlled by a toggle switch next to the bathroom mirror. The exhaust fan in Bathroom 108 has a toggle switch disconnect located next to the bathroom mirror.

There is no lighting installed in the attic.



Figure E12. Light Fixture located in Bathroom 108. (SRJA 2014)



Figure E13. Decorative sconce located in Bathroom 108. (HEI 2015)

The telephone service runs in conduit underground to the telephone demark point located on the north side of the exterior of the house (Figure E14). No data distribution system appears to be installed.



Figure E14. Telephone service entrance located on the north exterior of the house. (SRJA 2014)

Fire Alarm Systems

The fire alarm system consists of hardwired smoke detectors with battery-backup. There is one located in the basement which is missing a cover and battery. There is one located in Bedroom 106, Bedroom 107, Bedroom 109 and in Hall 105.

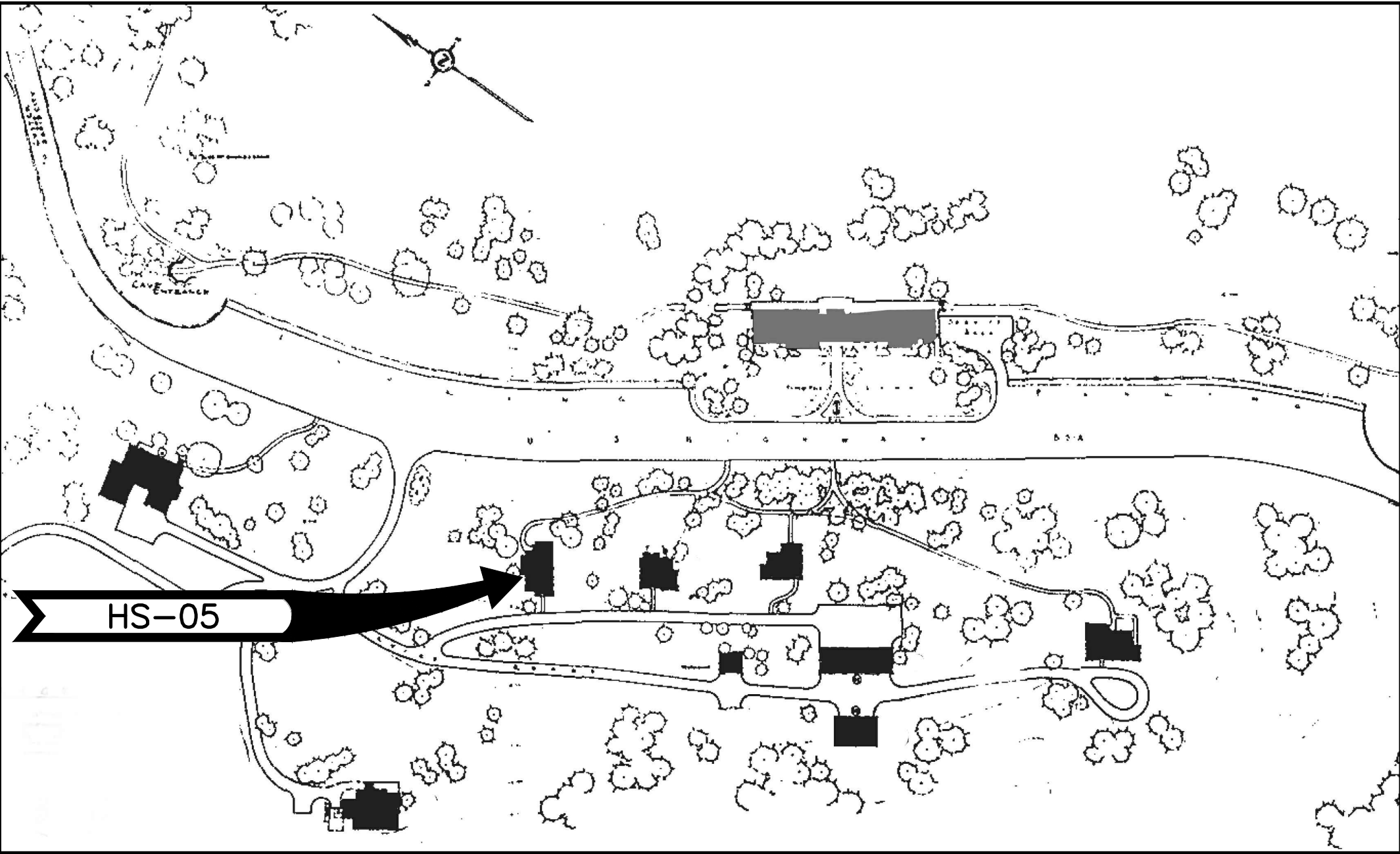
Fire Protection Systems

The house has one hand activated dry chemical fire extinguisher located in the Basement 001 (Figure F01).



Figure F01. Fire extinguisher in Basement 001 (HEI 2015)

HS-05 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)



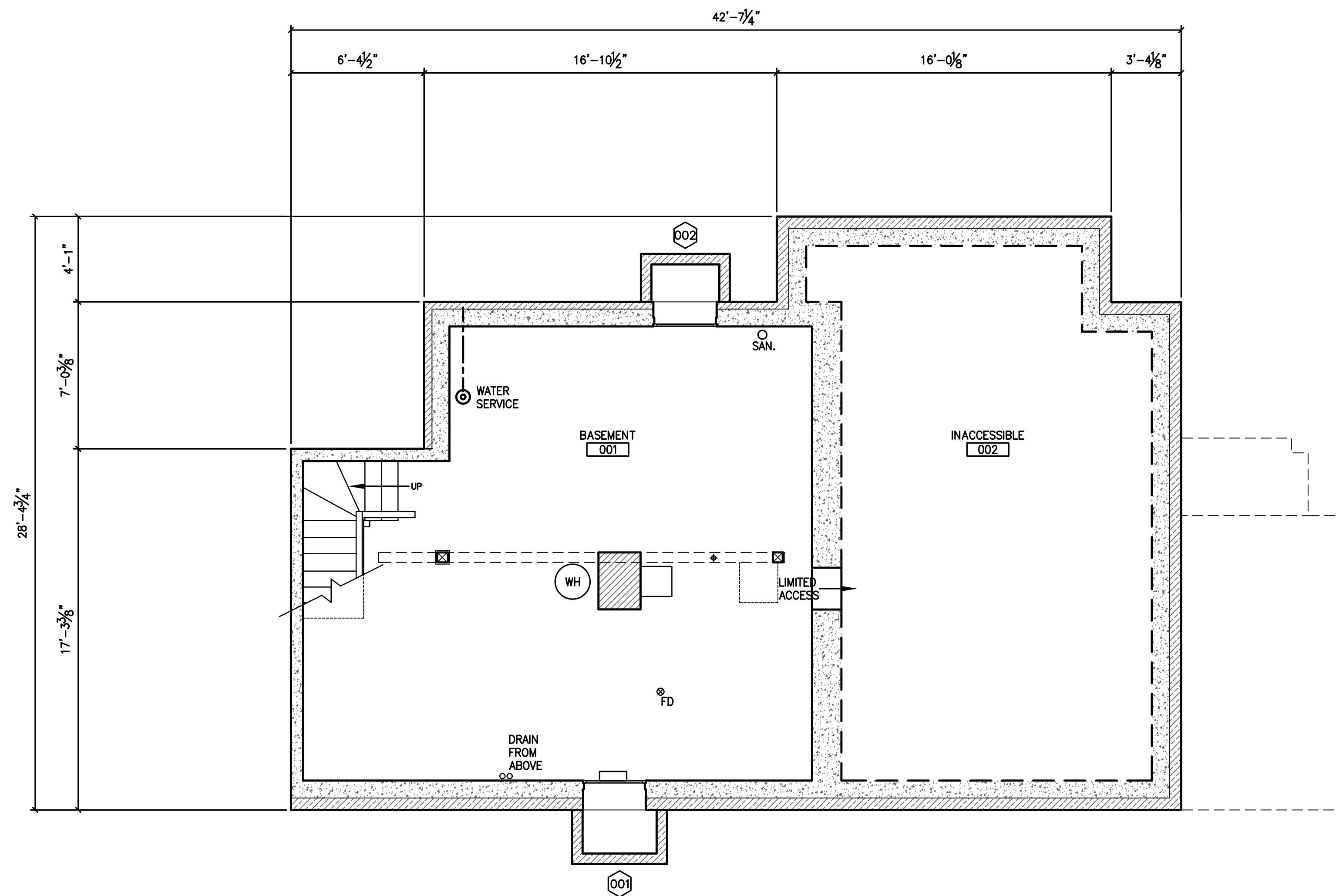
HS-05 QUARTERS (SRJA 2014)

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		DRAWING NO.
	UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE DENVER SERVICE CENTER		EXISTING CONDITION DRAWINGS		108
			HS-05		128868
			QUARTERS		
			HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK		PMIS/PKG NO. 158029
		REGION MIDWEST	COUNTY CUSTER	STATE SOUTH DAKOTA	SHEET 1 OF 8



DRAWING KEY:

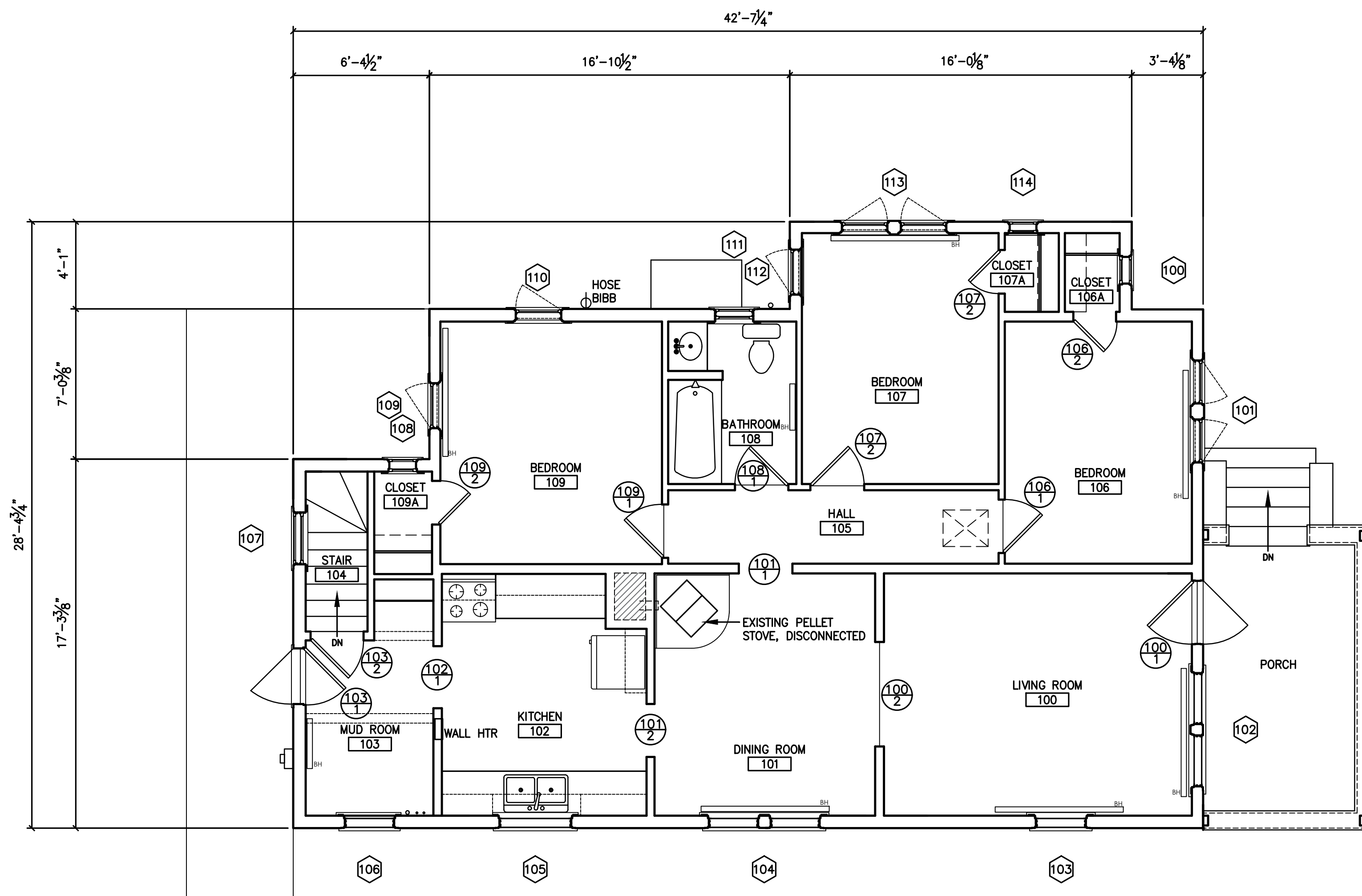
- MASONRY FOUNDATION WALLS
- CONCRETE FOUNDATION WALLS

1 EXISTING HS-05 BASEMENT PLAN
A0 1/4" = 1'-0"

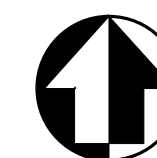
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SCALE OF FEET



 Susan Richards Johnson & Associates, Inc. 818 GRAND BLVD. SUITE 1150 KANSAS CITY, MO 64106 Ph. 816-474-0900 Fax 816-474-0909	DESIGNED: AG	SUB SHEET NO. A0	TITLE OF SHEET EXISTING CONDITION DRAWINGS HS-05 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK HOT SPRINGS, SOUTH DAKOTA	DRAWING NO. 108 128868 PMIS/PKG NO. 158029 SHEET 2 OF 8
	TECH. REVIEW: AG			
	DATE: 10/23/15			



1 EXISTING HS-05 FIRST FLOOR PLAN
A1 1/4" = 1'-0"




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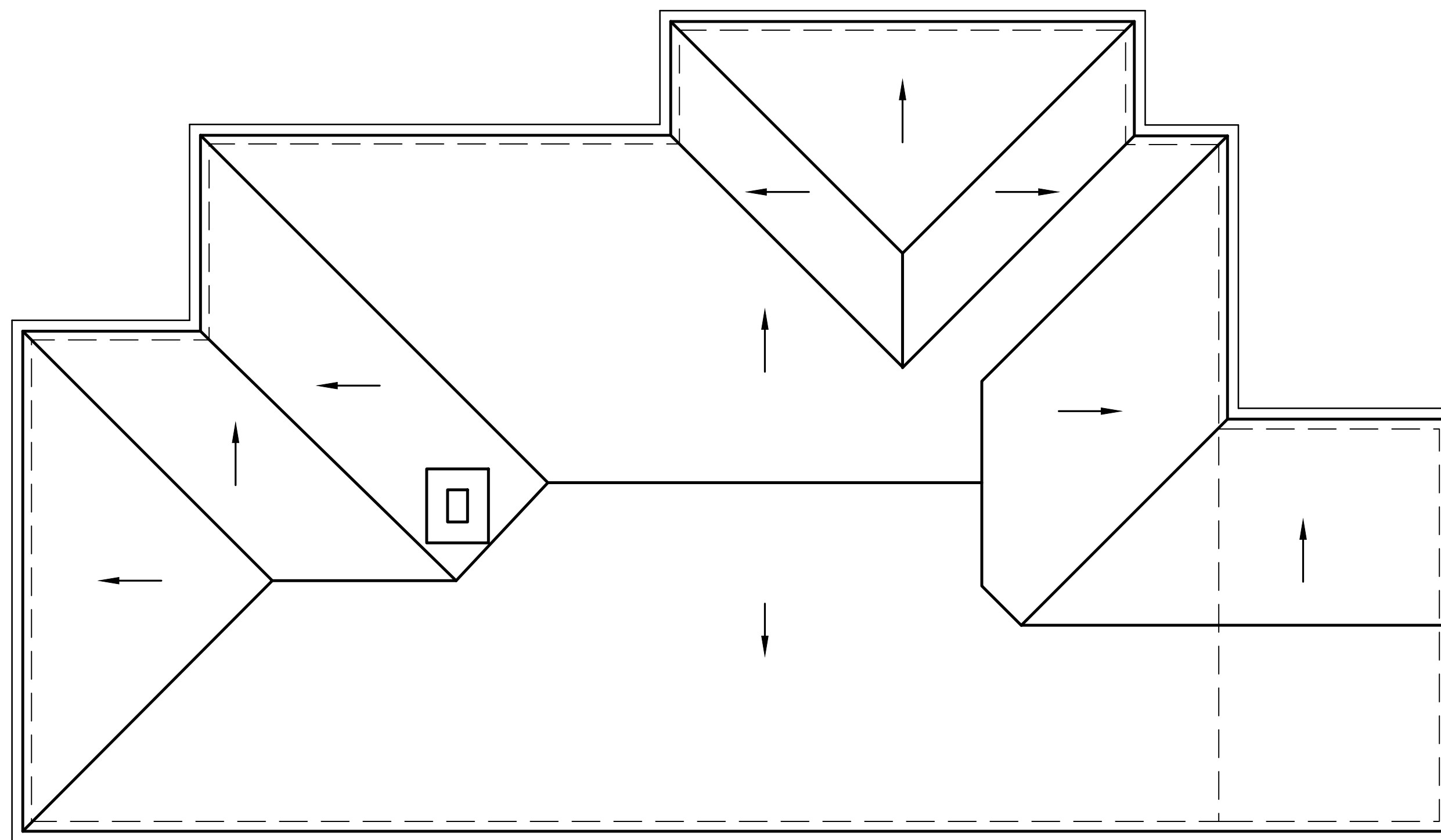
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10/23/15

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A1

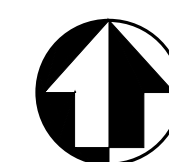
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HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128868
PMIS/PKG NO.
158029
SHEET
3 OF 8



1 EXISTING HS-05 ROOF PLAN
A2 1/4" = 1'-0"

4 0 4 8
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A2

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
HS-05
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128868
PMIS/PKG NO.
158029
SHEET
4 OF 8



1 EXISTING HS-05 EAST ELEVATION
A3 1/4" = 1'-0"



2 EXISTING HS-05 SOUTH ELEVATION
A3 1/4" = 1'-0"

4 0 4 8
SCALE OF FEET

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	DATE:			
	10/23/15			



1 EXISTING HS-05 WEST ELEVATION
A4 1/4" = 1'-0"



2 EXISTING HS-05 NORTH ELEVATION
A4 1/4" = 1'-0"




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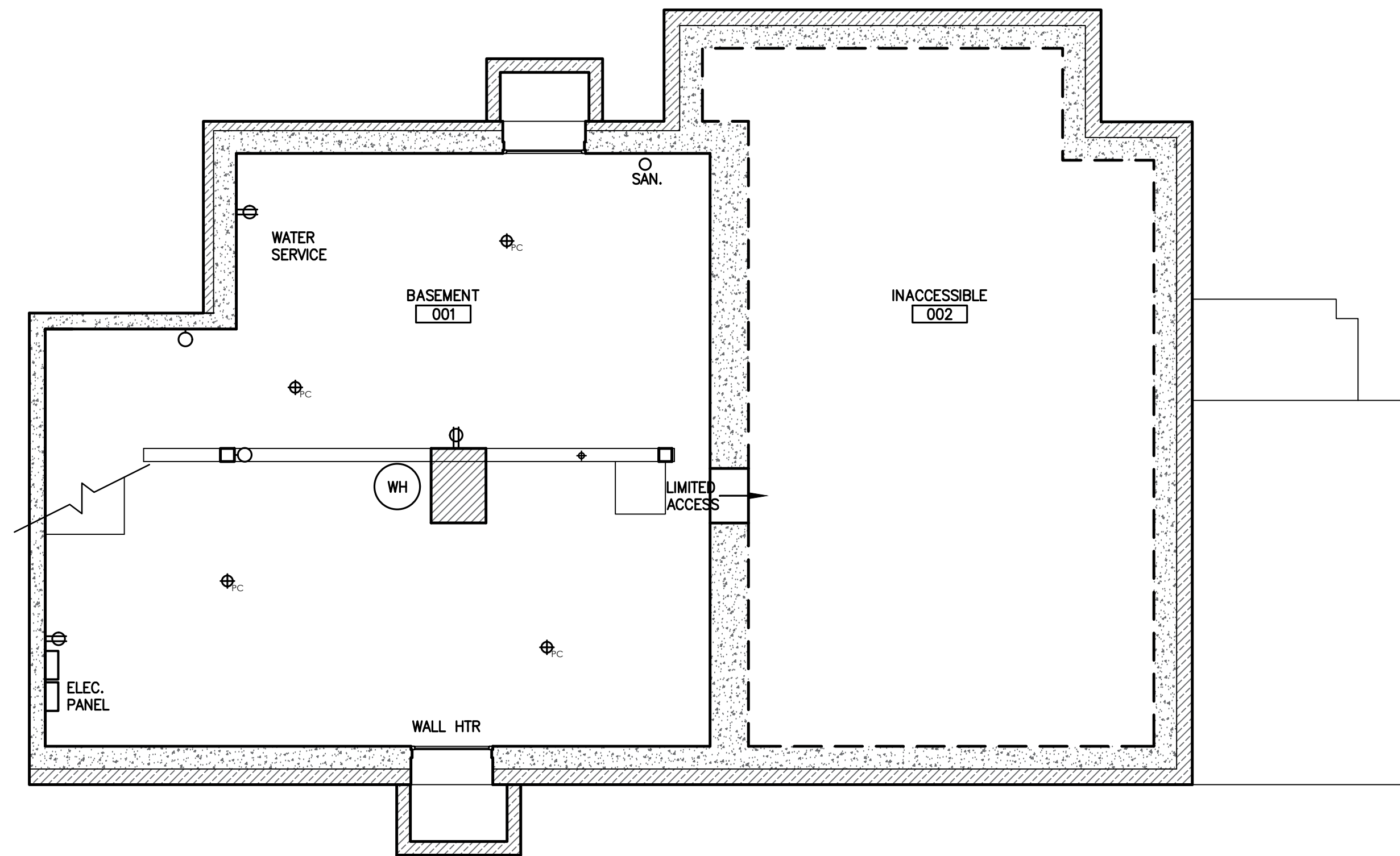
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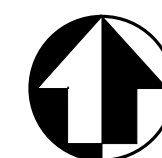
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HOT SPRINGS, SOUTH DAKOTA**

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**108
128868**
PMIS/PKG NO.
158029
SHEET
6 OF 8



1 EXISTING HS-05 BASEMENT ELECTRICAL PLAN AND REFLECTED CEILING PLAN
EO 1/4" = 1'-0"

4 0 4 8
SCALE OF FEET



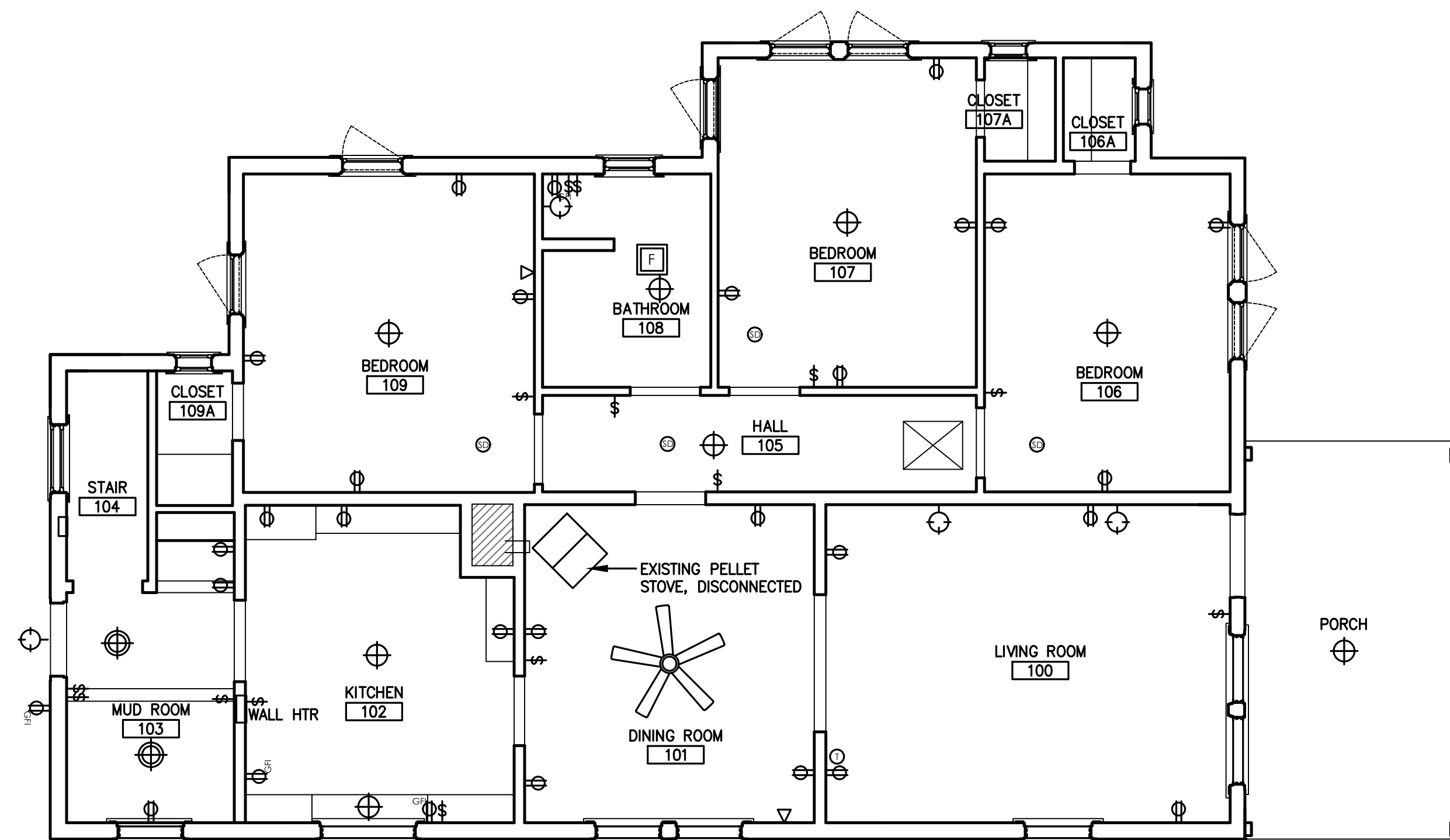
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108
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7 OF 8



1 EXISTING HS-05 FIRST FLOOR ELECTRICAL PLAN AND REFLECTED CEILING PLAN
E1 1/4" = 1'-0"



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8 OF 8



HS-05 ca. 1929, Apr. 4. (WICA Museum Collection #WICA 4265)

Treatment Recommendations

Treatment Recommendations

Introduction

This Historic Structure Report for the HS-05 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-05 was initially constructed in 1925 and was moved in 1935. At that time, the house was expanded and renovated.

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 before and throughout the period of significance, including photographs of some of the missing elements. These missing exterior elements include three square porch columns and the front porch light. This house never had shutters and has always had 1/1 wood double-hung windows, which differs from the adjacent HS-03, HS-06, HS-07 and HS-08.

The current use for the HS-05 Quarters is for seasonal park staff housing 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-05 is in very good overall condition, requiring maintenance and some rehabilitation to update finishes. Rehabilitation work associated with this critical repair will affect the exterior and interior of the house and will also affect the grading and the exterior concrete landing and walkway to the west of the house. Work will need to be coordinated and designed to provide the necessary stabilization and repairs in order to protect the building's historical features.

While rehabilitating the structure planning should be initiated to accommodate these required repairs: excavation of grade at the west elevation; stucco wall repair and painting; window replacement; replacement of missing wood columns; structural stabilization in the attic; a new basement crawl space access; 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 1924 or 1935 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.

Building Egress Fire Code Evaluation

The one story HS-05 was originally constructed in 1924 as ranger residence. 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, although occasionally it is used for temporary off-season housing. The roughly 1,056 square foot house contains three 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)
 - o 2013 Standard for the Installation of Sprinkler Systems (NFPA 13)
 - o 2013 National Fire Alarm and Signaling Code (NFPA 72)
 - o 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.
- R315.1 – Carbon monoxide alarms are required for new construction. No carbon monoxide detection system was found. A carbon monoxide alarm should be installed outside of each sleeping area in the immediate vicinity of the bedrooms.

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.⁹ 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.¹⁰ Pre-occupancy training may also include how to test smoke alarms and how to use fire extinguishers.¹¹

⁹ Structural Fire Reference Manual 58, National Park Service, 2015, 5.

¹⁰ Department of the Interior Housing Management Handbook, April 2008, 6.

¹¹ Ibid, 16.

Treatment Recommendations

With the intent of protecting the future integrity of the existing historic fabric and character defining features of the HS-05 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 architectural and structural 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.

Immediate Treatment and Maintenance Repair Recommendations

Refer to the Treatment Recommendation Drawings

Exterior Architectural and Structural Immediate Treatment Recommendations

1. Re-grade –

Re-grade along the west and portions of the south and 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 walkway along the west elevation. The concrete landing would need to be installed

at a lower elevation. Install a soft joint between the new concrete and the stone foundation. Repoint the newly-exposed stone foundation, as required.

2. Exterior Stone Foundation Cracks -

Cracks consistent with settlement are present on the south and north elevations. Consideration should be given to installing underpinning piers on this building. Piers could be installed under the areas at and adjacent to the cracks, however new cracks may appear as other parts of the building continue to settle.

Monitor northeast corner of the foundation where the corner stone may be rotating outward. All cracks should be repointed and monitored for future movement. If the cracks continue to project through the exterior walls, a treatment plan and design for installation of an underpinning stabilization may be required. Costs for this have not been included at this time.

3. Stone Foundation –

Clean existing stone foundation and steps. Repoint, as required. Fill cracks and monitor seasonally for further movement.

4. Porch Rehabilitation –

- Install missing three square wood columns, per the historic photographs and drawings.
- Repair wood rot at porch wall caps.
- Repair crack in stucco porch walls (interior and exterior). Monitor for further movement. If movement persists, more aggressive selective demolition investigation may be required to design a solution for this repair to view the condition between the concrete floor slab and the wood porch walls.
- Install new painted galvanized pipe handrail at the front stone steps.
- Clean existing concrete porch floor, seal cracks and install water repellent.

5. Stone Chimney –

- The stone chimney requires cleaning, spot repointing and mortar wash repair.
- Remove existing chimney down-draft flue.
- Install new pre-finished metal chimney cap, per SMACNA standards.

6. Restore Windows –

- Restore historic wood double-hung Window 107 sash, jamb and trim. Install new custom wood top-hung storm window. Option – rehabilitate existing screen sash.
- Restore historic fixed Window 100, 108 and 114 sash, jamb and trim. Repair/restore existing wood storm windows.

7. Stucco –

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

8. Replace Windows –

Replace non-historic metal window sashes and storm windows in Living Room, Dining Room, Kitchen and Mud Room with aluminum wood clad insulated windows. 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 rehabilitative 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 interior of new windows to match the surrounding trim. Match exterior aluminum color to the historic paint color determined in the paint test.

9. Paint –

- Paint exterior stucco after repairs are made. 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 finishes report.

10. Wood Louvers –

Inspect all open wood louvers in the attic. Replaced screens, as required.

11. Repair or replace weatherstripping at the storm Door 100/1

12. Re-route plumbing vents –

Re-route existing exposed plumbing vents from the south and north elevations to within the walls. These exposed painted pipes are a distraction from the historic exterior walls and do not meet code.

13. Replace light shade –

- Install a glass shade over the light above Door 103/1.
- Install a glass shade on the front porch light, refer to the historic photographs.

14. Inspect downspout drains -

Inspect all discharge lines for the buried downspouts and ensure they are draining properly.

Interior Architectural and Structural Immediate Treatment Recommendations

15. Attic Framing -

Over Room 100 there are 1x members that are supporting a hip rafter. The 1xs bear on the ceiling joists resulting in cracks in the ceiling plaster.

The 1x members should be replaced with 2x4 members. Additional ceiling joists should be sistered to each side of the existing joist below the new 2x4 members to stiffen the existing ceiling joists.

16. Crawl Space -

- Restore larger crawl space access in east concrete foundation wall in order to inspect Crawl Space 004 structure. Install an insulated door.
- Repair rim joist at existing small access opening where it has been damaged.
- Install insulation in first floor joists throughout the Crawl Space 002.
- Install foundation wall insulation in Crawl Space 002.
- Install new 12 mil vapor barrier throughout Crawl Space 002 floor.
- Install new foundation vent on south side of Crawl Space 002, as required. This may need to be installed in the rim joists in order to avoid damaging the stone foundation.
- Restore existing crawl space vent in north elevation.

17. Handrail –

Install new continuous handrail at the basement stairs.

18. Bathroom 108.

The shower surround requires caulking or replacement.

19. Window Finish –

Finish stain the interior of the existing bedroom egress windows. These were installed and never finished. Total 8 openings.

20. Pellet Stove –

Remove existing pellet heating stove and all related accessories, stone surround, raised hearth, thermostat and chimney flue. Restore and paint plaster walls. Repair flooring, walls and baseboard where stove is removed. This may necessitate removal of the wood laminate flooring. If extra flooring material is stored to patch into this location, it may be able to be patched; otherwise, this room will need to have new flooring installed.

21. Plaster-

- After structural stabilization in the attic is completed, repair cracks in Living Room ceiling. Paint ceiling when finished.
- Cracks are present over Door 100/2. These do not appear to be consistent with structural issues. They appear to follow the outline of a previous door opening. To repair the crack, the plaster should be removed and the framing for the arched opening should be re-anchored to the original door framing.
- Repair cracks at Door 109/1.

- Repair miscellaneous cracks in interior plaster walls and ceilings throughout the first floor.

22. Paint –

Paint walls and ceiling in Bedroom 106.

Touch-up paint throughout the first floor.

23. Install additional attic insulation, per the mechanical recommendations.

24. Install new shade on ceiling fixture in Bedroom 109 or replace fixture.

Mechanical/Plumbing/Electrical/Fire Protection Immediate Treatment Recommendations

Mechanical

25. 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.
26. The existing HVAC systems should be thoroughly inspected by a qualified service technician and repaired to operational condition or replaced.
27. The Bathroom 108 exhaust fan that 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.
28. Verify that the existing equipment including accessories being reused for this project are not damaged and are in good working order.
29. Clean existing equipment and equipment components being reused for this project.
30. Lubricate existing equipment being reused for this project in accordance with manufacturer's written instructions.
31. It is recommended for all ductwork penetrations to the exterior of the building have backdraft dampers installed unless not recommended by the manufacturer of the equipment in which the ductwork serves.

Plumbing Systems

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

33. 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.
34. If not existing, provide new access panels for existing plumbing at showers and bathtub or at any other location requiring maintenance access.
35. All vent piping penetrating through the roof should be 3-inch diameter minimum (IPC Section 903.2).
36. Vent pipes installed on the exterior of the building should be protected against freezing by insulation (IPC Section 903.7).
37. Vent pipes installed on the exterior of the building should terminate at a point not less than 10 feet above grade (IPC Section 903.6).
38. 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.
39. 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

40. 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.
41. The light fixtures should be re-lamped as necessary and cleaned, taking care to remove all dirt and debris. Consider replacing the fixtures and/or lamps with LED technology to save on energy costs. However, the historic lamps and sconces should have historically applicable lamps where exposed to view.

42. 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.
43. 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.
44. 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). The receptacles located in Basement 001 and in the laundry area of Mud Room 103 should be replaced with a GFCI receptacle or a GFCI circuit breaker protecting the receptacle. The receptacle on the north wall of Kitchen 102 next to the range is not labeled as GFCI protected, it should be replaced with a GFCI receptacle or if it is protected by a GFCI upstream it 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).
45. 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.

Telephone System

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

Fire Alarm System

47. The smoke detectors should be tested and batteries replaced if necessary. The system is hard wired with battery back-up. Replace faceplate on smoke detector located in Basement 001.
48. Install outside notification system for smoke detectors. Since the houses are fairly remote, an exterior audible alarm should be considered.

Fire Protection System

49. 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.

Carbon Monoxide Detection

50. Hard-wired carbon monoxide detection systems with audible notification should be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms.

Insulation

51. 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-07 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 Treatment 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. Remodel kitchen.
- C. Remodel Bathroom 108. Install new plumbing fixtures. Install new shower and surround. Replace flooring, lighting, vanity, mirror and paint throughout.
- D. Install new carpeting.
- E. Painting throughout the house.
- F. Remove carpet in Living Room and repair/restore historic wood flooring.
- G. Replace wood laminate flooring. Inspect original wood flooring to see if it is able to be restored. Repair, replace and refinish, as required.
- H. 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.
- I. When the roof is replaced, install new reproduction box gutters with rectangular downspouts to match the historic conditions.

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 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

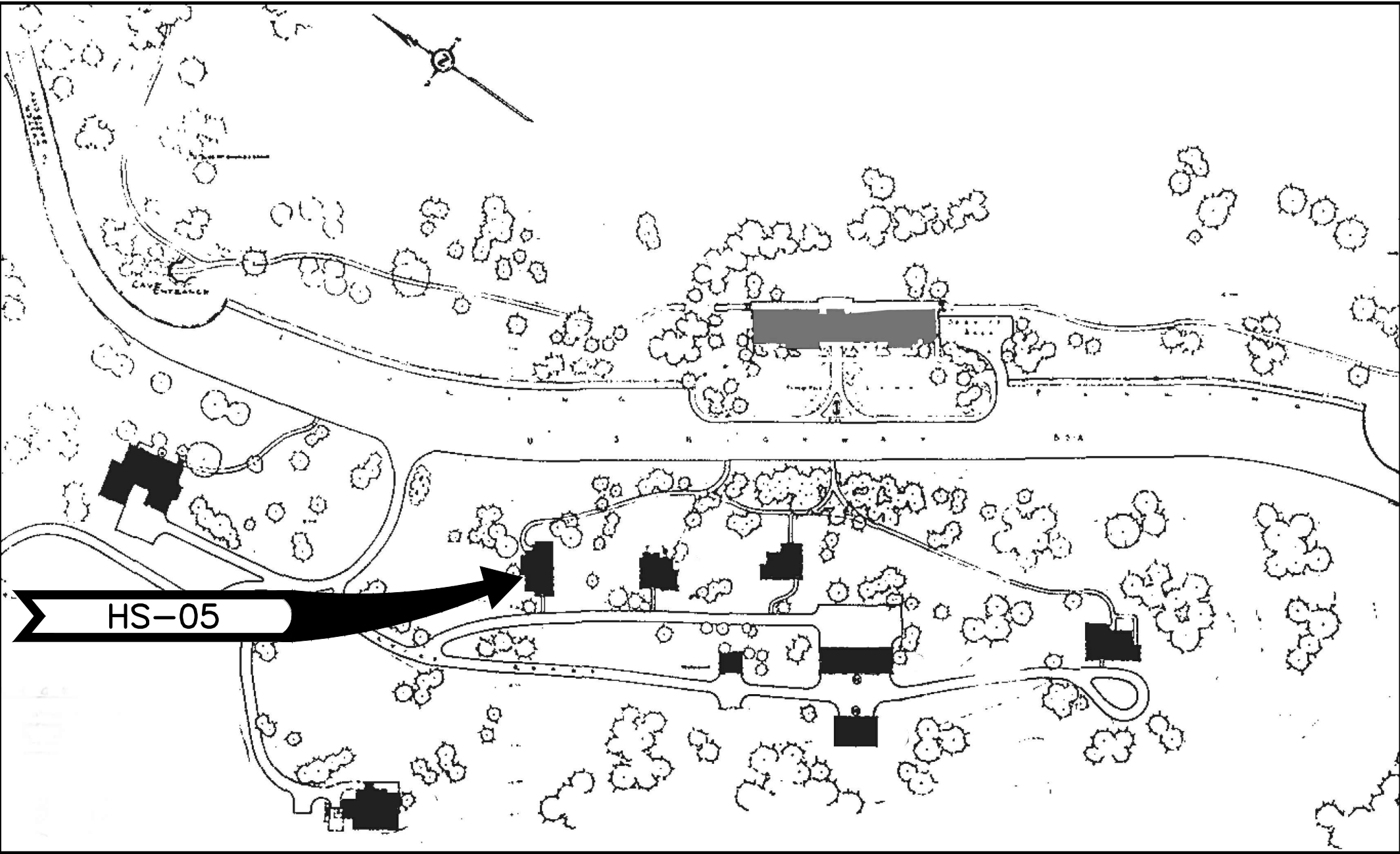
A code compliant electrical distribution system should be installed when the building is renovated. All circuit breakers serving loads in the dwelling unit shall be arc fault circuit interrupter (AFCI) circuit breakers per NEC 210.12 (A).

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-05 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)

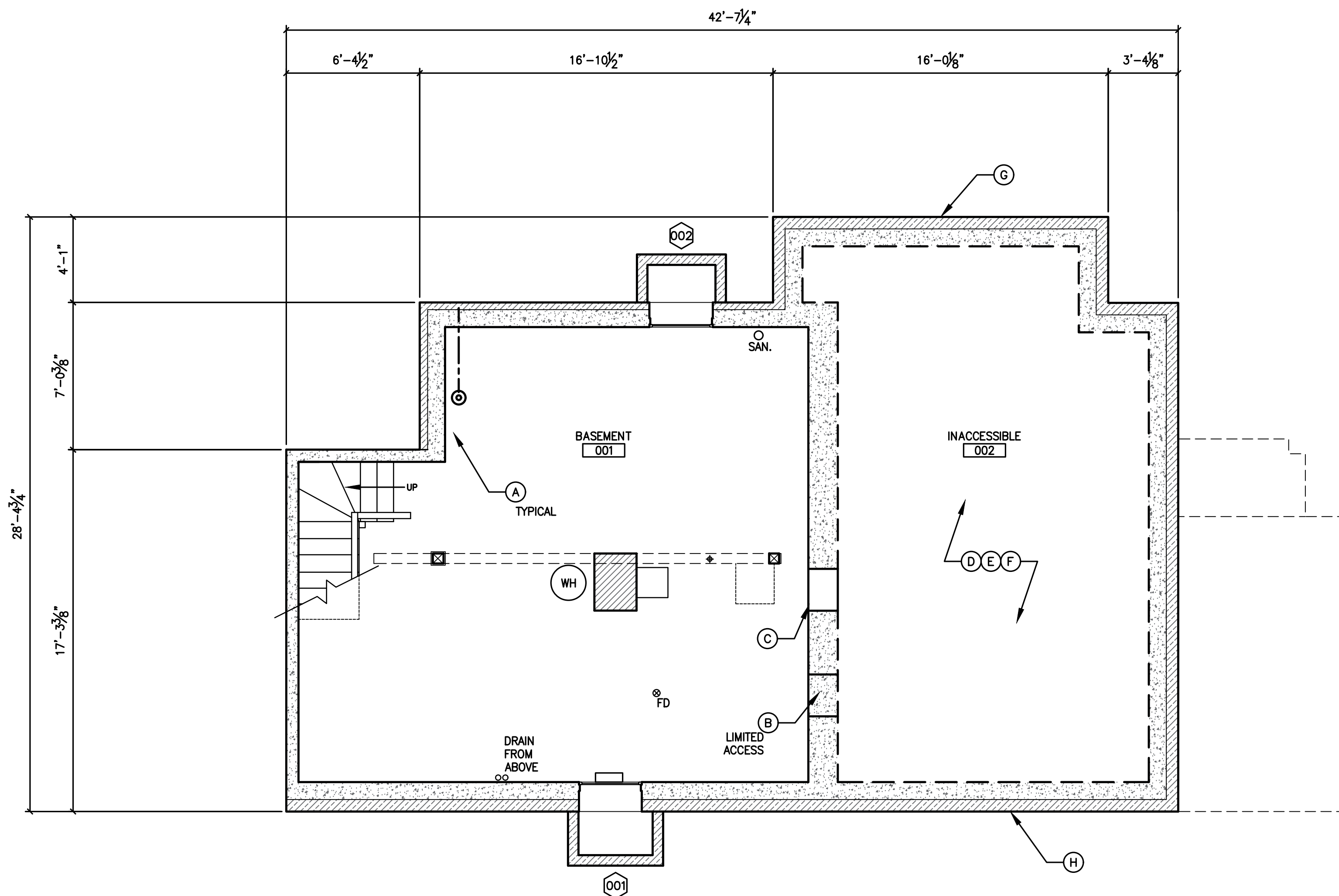


HS-05 QUARTERS (SRJA 2014)

INDEX OF DRAWINGS

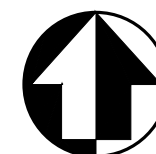
- 00 COVER
- ARCHITECTURAL
- TA0 BASEMENT/FOUNDATION FLOOR PLAN
 - TA1 FIRST FLOOR PLAN
 - TA2 ROOF PLAN
 - TA3 EAST ELEVATION AND SOUTH ELEVATION
 - TA4 WEST ELEVATION AND NORTH ELEVATION
- STRUCTURAL
- TS0 ATTIC FRAMING PLAN
 - TS1 ROOF FRAMING PLAN

	HISTORIC STRUCTURES REPORT		TITLE OF PROJECT TREATMENT RECOMMENDATION DRAWINGS		DRAWING NO. 108
	UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE DENVER SERVICE CENTER		HS-05 QUARTERS		128869
			HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK		PMIS/PKG NO. 158029
			REGION: MIDWEST COUNTY: CUSTER STATE: SOUTH DAKOTA		SHEET 1 OF 8



1 HS-05 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS - BASEMENT PLAN
TAO 1/4" = 1'-0"

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SCALE OF FEET



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DESIGNED:
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TECH. REVIEW:
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DATE:
1/27/16

SUB SHEET NO.
TAO

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-05
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128869
PMS/PKG NO.
158029
SHEET
2 OF 8

- 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. EPLACE RECEPTACLES WITH GFCI'S, TYPICAL THREE LOCATIONS.
 - B. INSTALL NEW CRAWLSPACE ACCESS WITH INSULATED DOOR IN EAST CONCRETE WALL.
 - C. REPAIR JOIST AND SEAL EXISTING CRAWL SPACE ACCESS.
 - D. INSTALL INSULATION AT FLOOR JOISTS IN CRAWL SPACE.
 - E. INSTALL PERIMETER WALL INSULATION.
 - F. INSTALL 12 MIL VAPOR BARRIER AT FLOOR.
 - G. RESTORE EXISTING FOUNDATION VENT.
 - H. INSTALL NEW FOUNDATION VENT.
 - I. REMOVE PELLET STOVE AND ALL ACCESSORIES. REMOVE WALL AND FLOOR PROTECTION. PATCH WALLS AND FLOOR, AS REQUIRED. PATCH FLUE INTO CHIMNEY.
 - J. PREP, PRIME AND PAINT WALLS AND CEILING.
 - K. REMODEL BATHROOM AND RE-ROUTE PLUMBING VENT THROUGH THE ROOF.
 - L. REPAIR CRACKS IN PLASTER.
 - M. VENT BATHROOM 108 EXHAUST FAN THROUGH ROOF.
 - N. REPLACE GLASS COVER ON LIGHT FIXTURE IN ROOM 109.
 - O. REPLACE GLASS COVER ON LIGHT FIXTURE AT DOOR 103/1.
 - P. REPAIR CRACKS IN CEILING. PREP, PRIME AND PAINT.
 - Q. NOT SHOWN ON DRAWINGS. INSTALL ADDITIONAL INSULATION IN ATTIC.
 - R. INVESTIGATE EXTERIOR WALLS FOR EXISTING INSULATION. INSTALL SUPPLEMENTAL INSULATION, AS REQUIRED.
 - S. INSTALL CONTINUOUS HANDRAIL.
 - T. REINFORCE CEILING JOISTS AND ATTIC FRAMING ABOVE, PER STRUCTURAL RECOMMENDATIONS.
 - U. REPAIR CRACKS IN CONCRETE PORCH FLOOR. CLEAN AND INSTALL SEALER.
 - V. INSTALL NEW GALVANIZED PAINTED HANDRAIL.
 - W. RE-ROUTE KITCHEN AND BATHROOM VENT THROUGH ROOF.
 - X. RE-GRADE 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 SLAB AT LOWER ELEVATION.
 - Y. STAIN INTERIOR WINDOWS.
 - Z. REPLACE EXISTING WINDOWS WITH NEW HISTORICALLY APPROPRIATE ALUMINUM WOOD CLAD DOUBLE HUNG WINDOWS.
 - AA. INSTALL GLASS GLOBE AT PORCH LIGHT.
 - AB. REPOINT EXISTING MORTAR JOISTS AT STONE LANDING.
 - AC. FABRICATE REPRODUCTION WOOD PORCH COLUMNS.
 - AD. REMOVE DOWNDRAFT FLUE CAP. INSTALL PRE-FINISHED METAL FLUE CAP.

- 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.
- SCOPE OF WORK:
- L3. INSTALL NEW CARPETING.
 - L4. RENOVATE THE KITCHEN. IF A KITCHEN WHICH IS MORE PERIOD APPROPRIATE IS DESIRED, CONSULT WITH HISTORIC DRAWINGS FOR OTHER RESIDENCES IN THE HISTORIC HOUSING AREA FOR PRECEDENT CABINETRY DESIGN.
 - L5. REMOVE CARPETING AND REPAIR/RESTORE HISTORIC WOOD FLOORING.
 - L6. REMOVE WOOD LAMINATE FLOORING AND RESTORE WOOD FLOORING.
 - L7. 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.
 - L8. CONSIDER INSTALLATION OF A HIGH-EFFICIENCY FORCED AIR HVAC SYSTEM, PER THE RECOMMENDATIONS.
 - L9. INSTALL A BACKFLOW PREVENTER ON THE DOMESTIC WATER ENTRY.
 - L10. BRING EXISTING ELECTRICAL DISTRIBUTION SYSTEM UP TO CODE, PER RECOMMENDATIONS.
 - L11. INSTALL AUDIBLE FIRE ALARM TO THE EXISTING SYSTEM.

- DRAWING KEY:
- MASONRY FOUNDATION WALLS
 - CONCRETE FOUNDATION WALLS

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

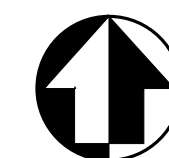
IMMEDIATE TREATMENT SCOPE OF WORK:

- LONG TERM TREATMENT SCOPE OF WORK:

- SCOPE OF WORK:

- MECHANICAL/ELECTRICAL/PLUMBING WORK:

- L8. CONSIDER INSTALLATION OF A HIGH-EFFICIENCY FORCED AIR HVAC SYSTEM, PER THE RECOMMENDATIONS.
- L9. INSTALL A BACKFLOW PREVENTER ON THE DOMESTIC WATER ENTRY.
- L10.BRING EXISTING ELECTRICAL DISTRIBUTION SYSTEM UP TO CODE, PER RECOMMENDATIONS.
- L11.INSTALL AUDIBLE FIRE ALARM TO THE EXISTING SYSTEM.



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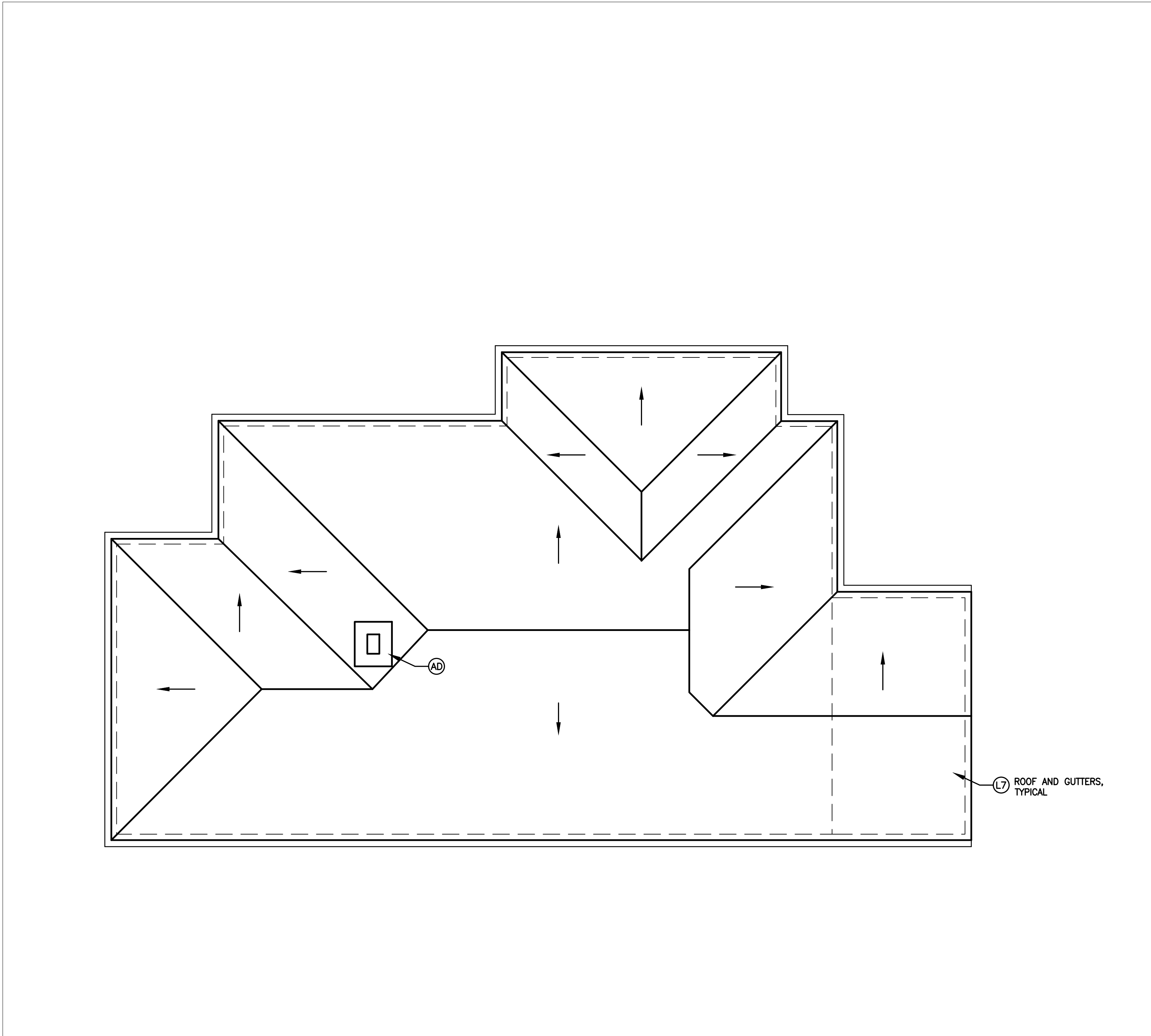
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TREATMENT RECOMMENDATION DRAWINGS		
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QUARTERS		PI
HISTORIC HOUSING AREA		
WIND CAVE NATIONAL PARK		
HOT SPRINGS, SOUTH DAKOTA		

RAWING NO.
108
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MIS/PKG NO.
158029

SHEET
3 OF 8



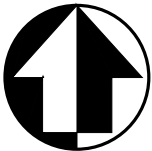
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 - R. INVESTIGATE EXTERIOR WALLS FOR EXISTING INSULATION. INSTALL SUPPLEMENTAL INSULATION, AS REQUIRED.
 - S. INSTALL CONTINUOUS HANDRAIL.
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- LONG TERM TREATMENT SCOPE OF WORK:**
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 - L5. REMOVE CARPETING AND REPAIR/RESTORE HISTORIC WOOD FLOORING.
 - L6. REMOVE WOOD LAMINATE FLOORING AND RESTORE WOOD FLOORING.
 - L7. 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.
- MECHANICAL/ELECTRICAL/PLUMBING WORK:**
- L8. CONSIDER INSTALLATION OF A HIGH-EFFICIENCY FORCED AIR HVAC SYSTEM, PER THE RECOMMENDATIONS.
 - L9. INSTALL A BACKFLOW PREVENTER ON THE DOMESTIC WATER ENTRY.
 - L10. BRING EXISTING ELECTRICAL DISTRIBUTION SYSTEM UP TO CODE, PER RECOMMENDATIONS.
 - L11. INSTALL AUDIBLE FIRE ALARM TO THE EXISTING SYSTEM.

1 HS-05 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS - ROOF PLAN
TA2 1/4" = 1'-0"

4 0 4 8
SCALE OF FEET




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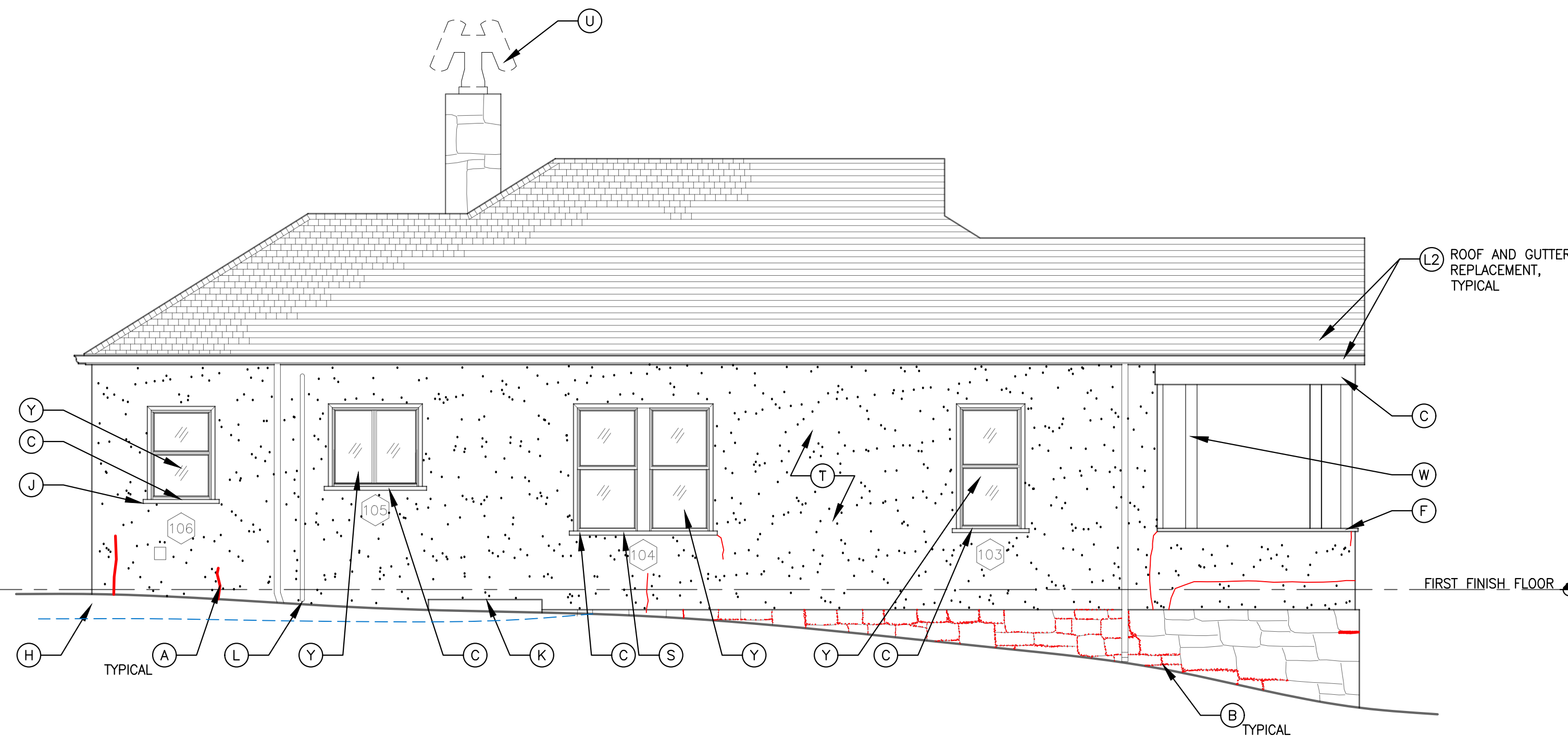
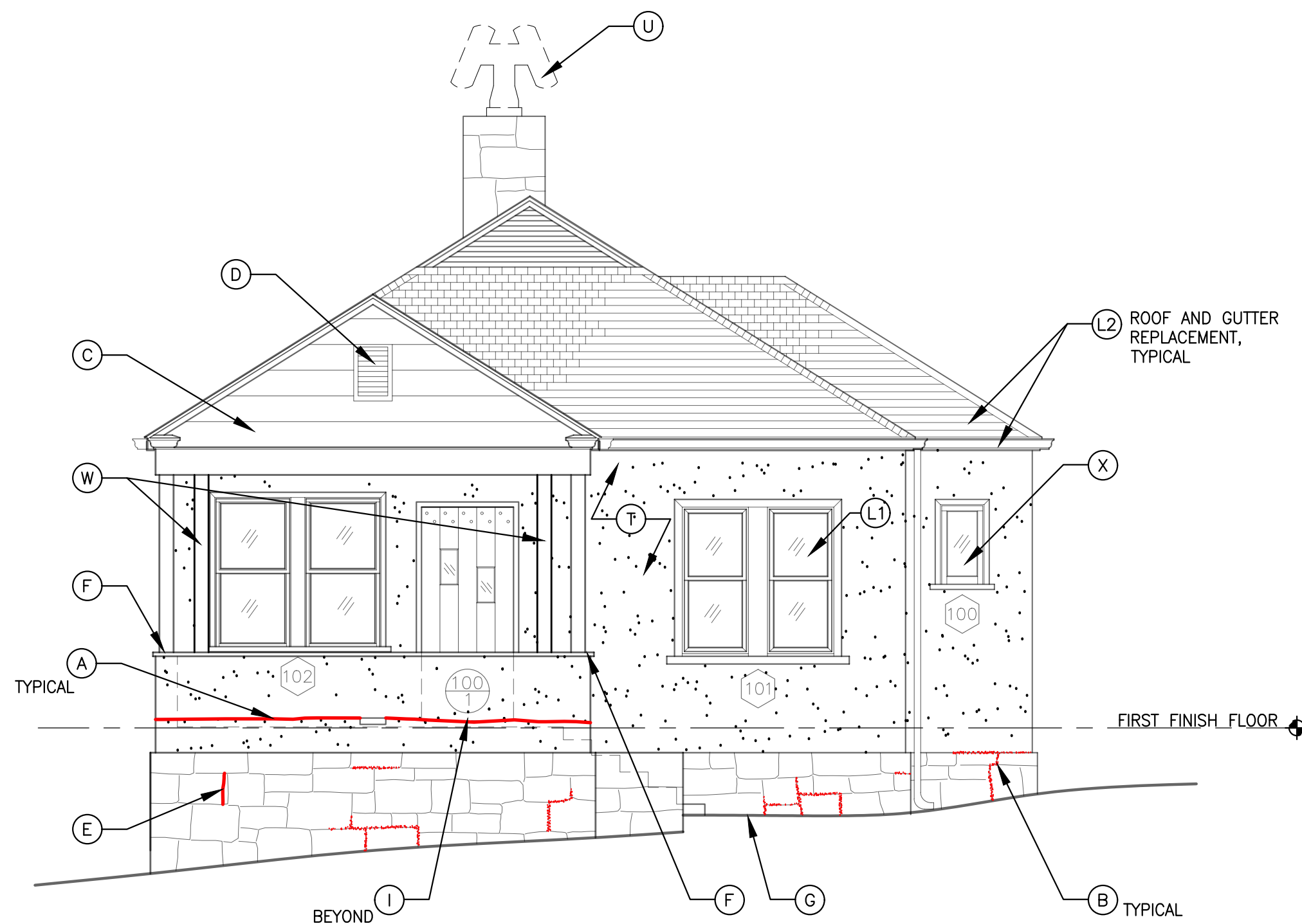
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SUB SHEET NO.

TA2

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-05
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128869
PMS/PKG NO.
158029
SHEET
4 of 8



GENERAL NOTES:

1. PERFORM HAZARDOUS MATERIALS TESTING BEFORE INITIATING ANY WORK.
2. SPOT REPOINT AS REQUIRED. NEW MORTAR SHOULD MATCH EXISTING IN COMPOSITION, COLOR, TEXTURE AND PROFILE.
3. 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 RE-PAINT OR RE-STAIN.
- D. VERIFY IF SCREENING IS IN PLACE. REPLACE, AS REQUIRED.
- E. PATCH AND REPAIR CRACK IN STONE.
- F. PATCH AND REPAIR DETERIORATED WOOD PORCH WALL CAP.
- G. RE-GRADE TO SLOPE AWAY FROM THE BUILDING.
- H. RE-GRADE 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 SLAB AT LOWER ELEVATION.
- I. REPAIR DOOR. INSTALL WEATHERSTRIPPING.
- J. PATCH AND REPAIR HOLE IN STUCCO.
- K. SECURE EXISTING COVER ON WINDOW WELL.
- L. RE-ROUTE KITCHEN OR BATHROOM VENT THROUGH ROOF.
- M. INSTALL NEW GLASS GLOBE ON LIGHT FIXTURE.
- N. REPAIR DETERIORATED SCREEN FRAME AND REPLACE SCREEN. INSTALL NEW STORM WINDOW FOR WINTER USE.
- O. REPAIR CRAZING STUCCO.
- P. INSTALL SOFT JOINT BETWEEN THE CONCRETE PORCH AND THE STUCCO FINISH ON THE BUILDING.
- Q. REPAIR DETERIORATED STORM WINDOW.
- R. INSTALL SCREEN IN CRAWL SPACE VENT.
- S. SECURE METAL SILL TO EXTERIOR WALL AND FILL GAPS ON THE SIDES THAT ARE EXPOSING THE ORIGINAL WOOD SILL.
- T. REPAINT STUCCO 100% IN HISTORIC OCHRE COLOR.
- U. REMOVE DOWNDRAFT FLUE CAP. INSTALL PRE-FINISHED METAL FLUE CAP.
- V. INSTALL PAINTED GALVANIZED PAINTED HANDRAIL.
- W. FABRICATE REPRODUCTION WOOD PORCH COLUMNS.
- X. RESTORE/PAINT HISTORIC WINDOW.
- Y. REPLACE EXISTING WINDOWS WITH NEW HISTORICALLY APPROPRIATE ALUMINUM WOOD CLAD DOUBLE-HUNG WINDOWS.

LONG TERM TREATMENT SCOPE OF WORK:

- L1. EXISTING EXTERIOR REPLACEMENT TRIM PANNING AT EXISTING REPLACEMENT WINDOWS IS TOO WIDE AND DOES NOT MATCH THE HISTORIC CONDITION. INVESTIGATE BEHIND THE EXISTING PANNING TO DETERMINE IF THE EXISTING WINDOW MATCHES THE ORIGINAL WINDOW ROUGH OPENING. IF THE WINDOW MATCHES, REPLACE EXTERIOR TRIM TO MATCH THE HISTORIC TRIM DIMENSION AND DETAILING. IF THE WINDOW DOES NOT MATCH THE ORIGINAL ROUGH OPENING, INSTALL NEW METAL CLAD WOOD WINDOW TO MATCH THE ORIGINAL WINDOW, INCLUDING ROUGH OPENING, SASH AND DIVIDED LITE CONFIGURATION.
- L2. 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.

1 HS-05 IMMEDIATE AND LONG TERM TREATMENT - HS-05 EAST ELEVATION
TA3 1/4" = 1'-0"

2 HS-05 IMMEDIATE AND LONG TERM TREATMENT - SOUTH ELEVATION
TA3 1/4" = 1'-0"

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SCALE OF FEET

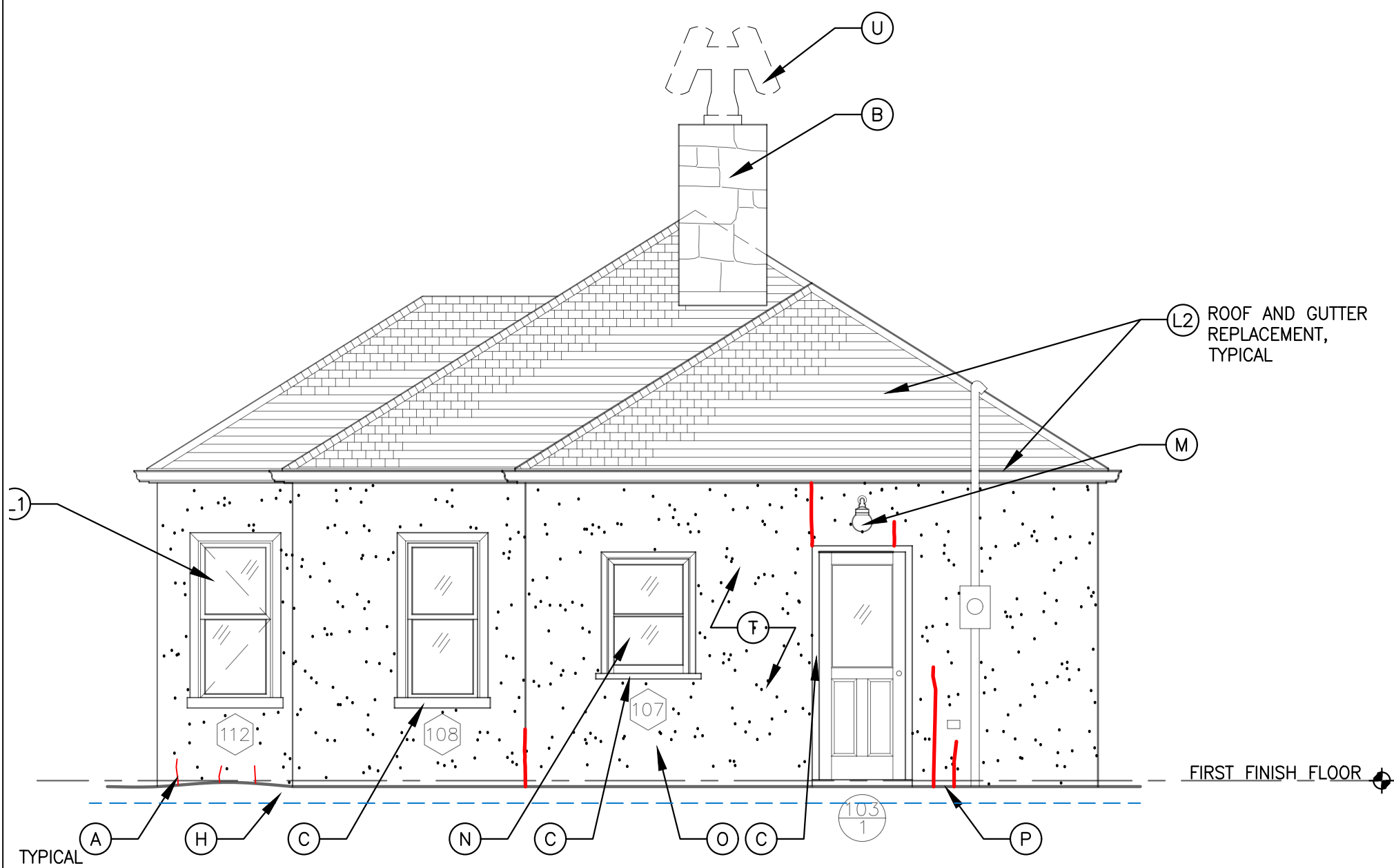

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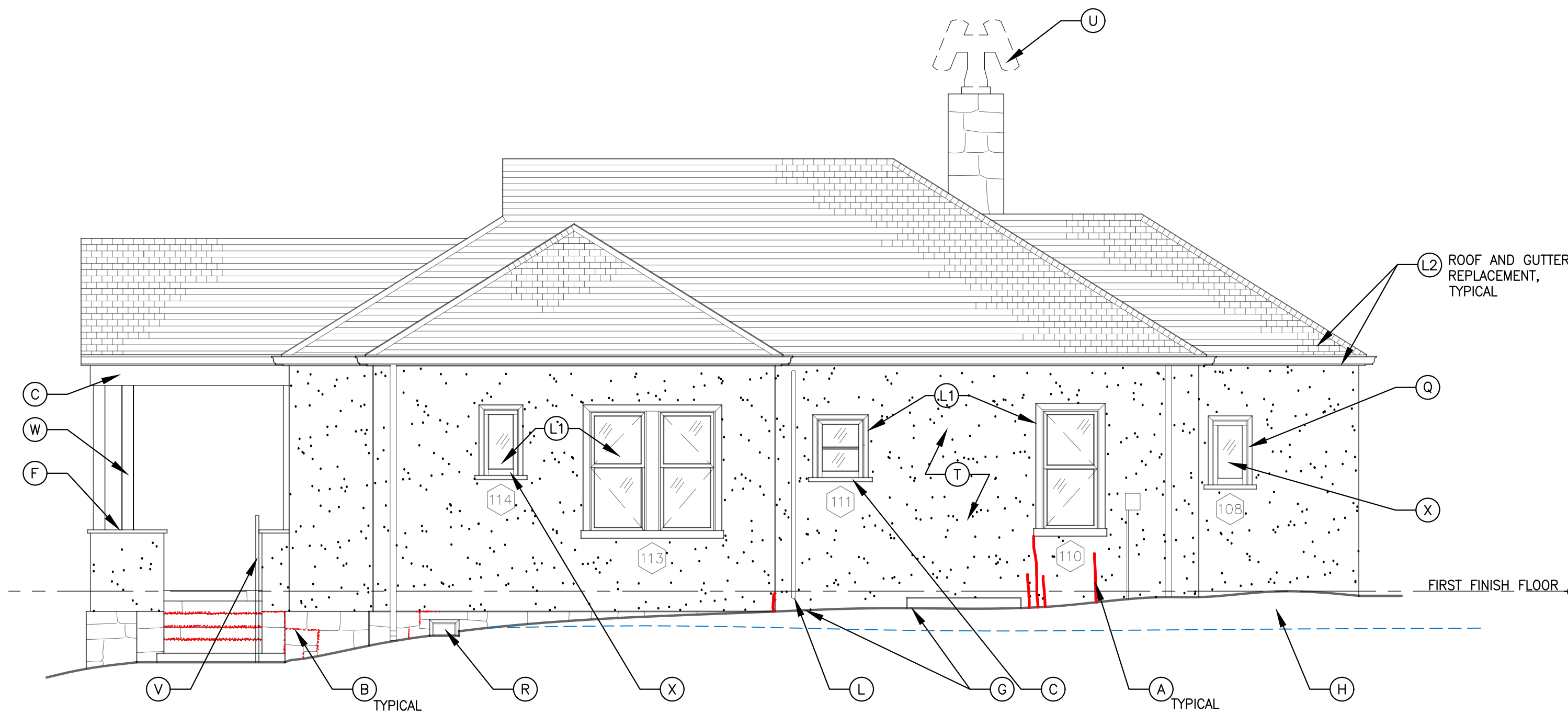
SUB SHEET NO.
TA3

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-05
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128869
PMIS/PKG NO.
158029
SHEET
5 OF 8



1 HS-05 IMMEDIATE AND LONG TERM TREATMENT — WEST ELEVATION
TA4 1/4" = 1'-0"



2 HS-05 IMMEDIATE AND LONG TERM TREATMENT — NORTH ELEVATION
TA4 1/4" = 1'-0"

GENERAL NOTES:

1. PERFORM HAZARDOUS MATERIALS TESTING BEFORE INITIATING ANY WORK.
2. SPOT REPOINT AS REQUIRED. NEW MORTAR SHOULD MATCH EXISTING IN COMPOSITION, COLOR, TEXTURE AND PROFILE.
3. 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 RE-PAINT OR RE-STAIN.
- D. VERIFY IF SCREENING IS IN PLACE. REPLACE, AS REQUIRED.
- E. PATCH AND REPAIR CRACK IN STONE.
- F. PATCH AND REPAIR DETERIORATED WOOD PORCH WALL CAP.
- G. RE-GRADE TO SLOPE AWAY FROM THE BUILDING.
- H. RE-GRADE TO A MINIMUM OF 6" BELOW THE FINISH FLOOR.
- I. REPAIR DOOR. INSTALL WEATHERSTRIPPING.
- J. PATCH AND REPAIR HOLE IN STUCCO.
- K. SECURE EXISTING COVER ON WINDOW WELL.
- L. RE-ROUTE KITCHEN OR BATHROOM VENT THROUGH ROOF.
- M. INSTALL NEW GLASS GLOBE ON LIGHT FIXTURE.
- N. REPAIR DETERIORATED SCREEN FRAME AND REPLACE SCREEN. INSTALL NEW STORM WINDOW FOR WINTER USE.
- O. REPAIR CRAZING STUCCO.
- P. INSTALL SOFT JOINT BETWEEN THE CONCRETE PORCH AND THE STUCCO FINISH ON THE BUILDING.
- Q. REPAIR DETERIORATED STORM WINDOW.
- R. INSTALL SCREEN IN CRAWL SPACE VENT.
- S. SECURE METAL SILL TO EXTERIOR WALL AND FILL CAPS ON THE SIDES THAT ARE EXPOSING THE ORIGINAL WOOD SILL.
- T. REPAINT STUCCO 100% IN HISTORIC OCHRE COLOR.
- U. REMOVE DOWNDRAFT FLUE CAP. INSTALL PRE-FINISHED METAL FLUE CAP.
- V. INSTALL PAINTED GALVANIZED PAINTED HANDRAIL.
- W. FABRICATE REPRODUCTION WOOD PORCH COLUMNS.
- X. RESTORE/PAINT HISTORIC WINDOW.
- Y. REPLACE EXISTING WINDOWS WITH NEW HISTORICALLY APPROPRIATE ALUMINUM WOOD CLAD DOUBLE-HUNG WINDOWS.

LONG TERM TREATMENT SCOPE OF WORK:

- L1. EXISTING EXTERIOR REPLACEMENT TRIM PANNING AT EXISTING REPLACEMENT WINDOWS IS TOO WIDE AND DOES NOT MATCH THE HISTORIC CONDITION. INVESTIGATE BEHIND THE EXISTING PANNING TO DETERMINE IF THE EXISTING WINDOW MATCHES THE ORIGINAL WINDOW ROUGH OPENING. IF THE WINDOW MATCHES, REPLACE EXTERIOR TRIM TO MATCH THE HISTORIC TRIM DIMENSION AND DETAILING. IF THE WINDOW DOES NOT MATCH THE ORIGINAL ROUGH OPENING, INSTALL NEW METAL CLAD WOOD WINDOW TO MATCH THE ORIGINAL WINDOW, INCLUDING ROUGH OPENING, SASH AND DIVIDED LITE CONFIGURATION.
- L2. 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.



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

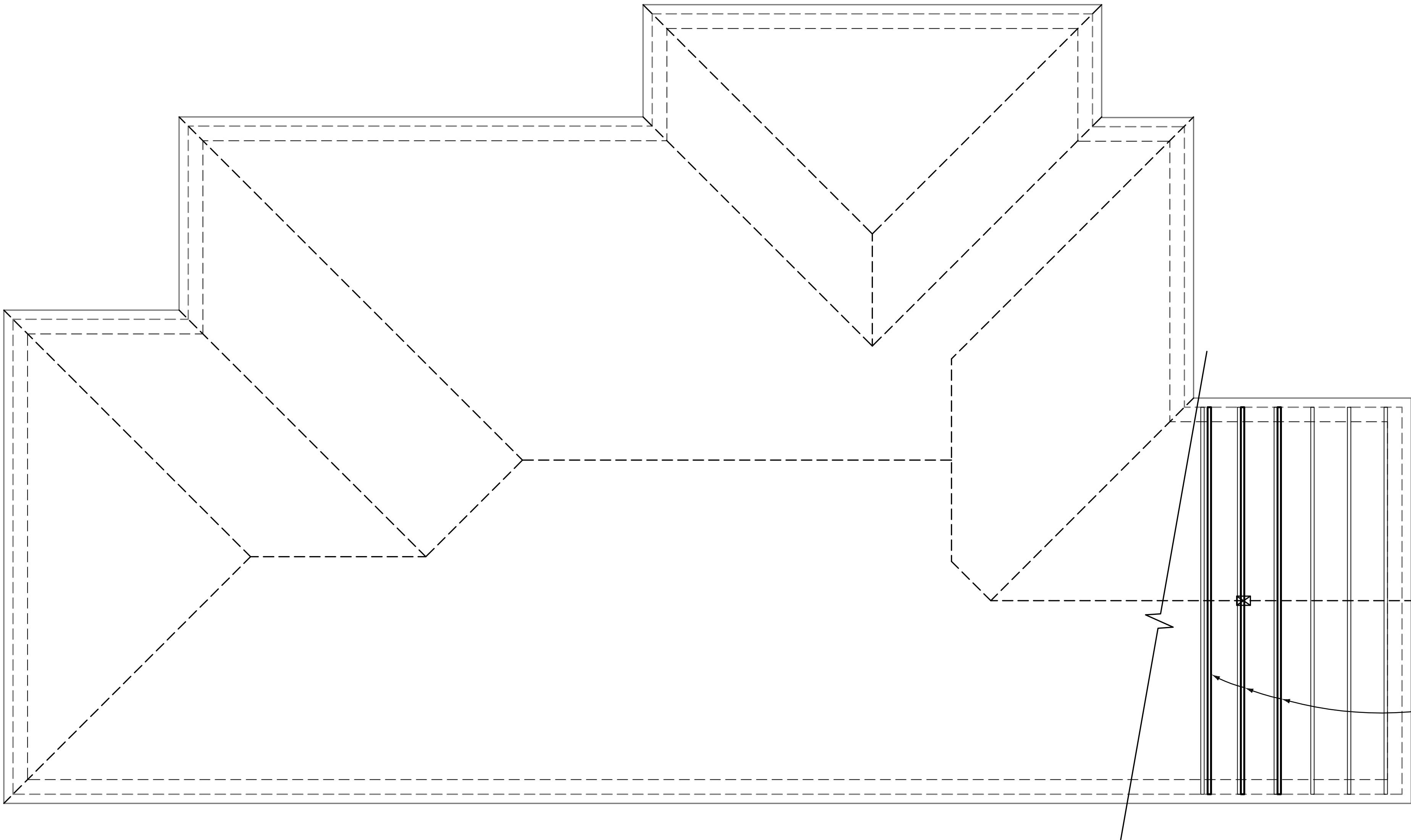
DESIGNED:
AG
CHECKED:
AG
TECH. REVIEW:
AG
DATE:
1/27/16

SUB SHEET NO.
TA4

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-05
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

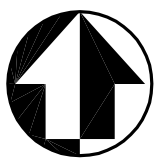
DRAWING NO.
108
128869
PMIS/PKG NO.
158029
SHEET
6 OF 8

3/30/15 08:52 LFRISBE R19 C:\2014\147\DRAWINGS\02 TREATMENT DRAWINGS\XX- WIND CAVE- SECOND SET.DWG



1
TSO

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
GADD
LEF
TECH. REVIEW:
DATE:
1/27/16

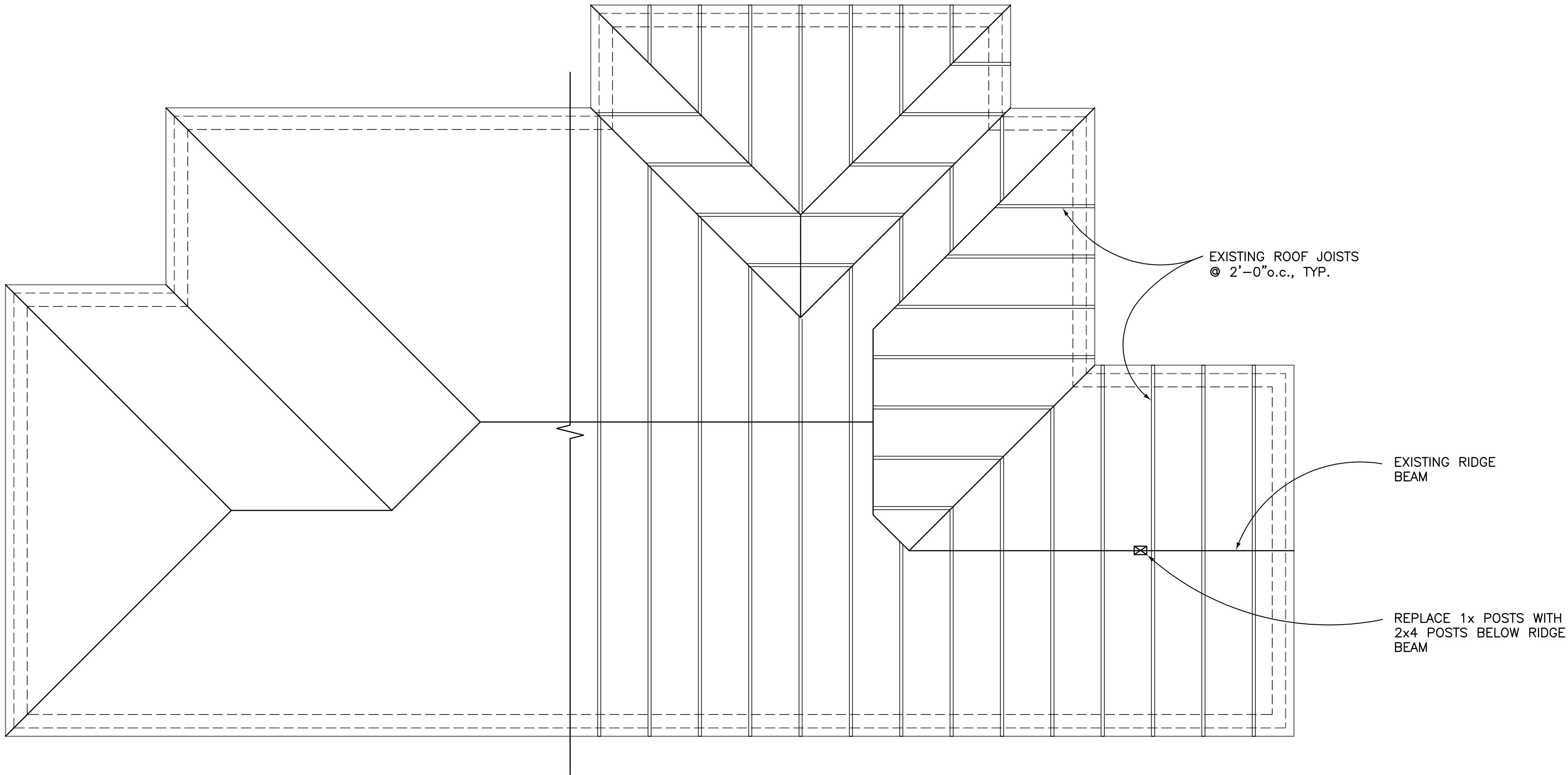
SUB SHEET NO.

TSO

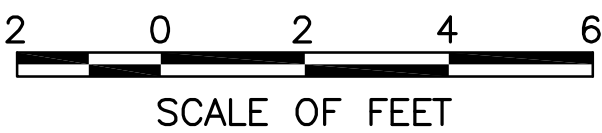
TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-05
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128869
PMIS/PKG NO.
158029
SHEET
7 OF 8

3/30/15 08:52 LFRISBE R19 C:\2014\147\DRAWINGS\02 TREATMENT DRAWINGS\XX- WIND CAVE- SECOND SET.DWG



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



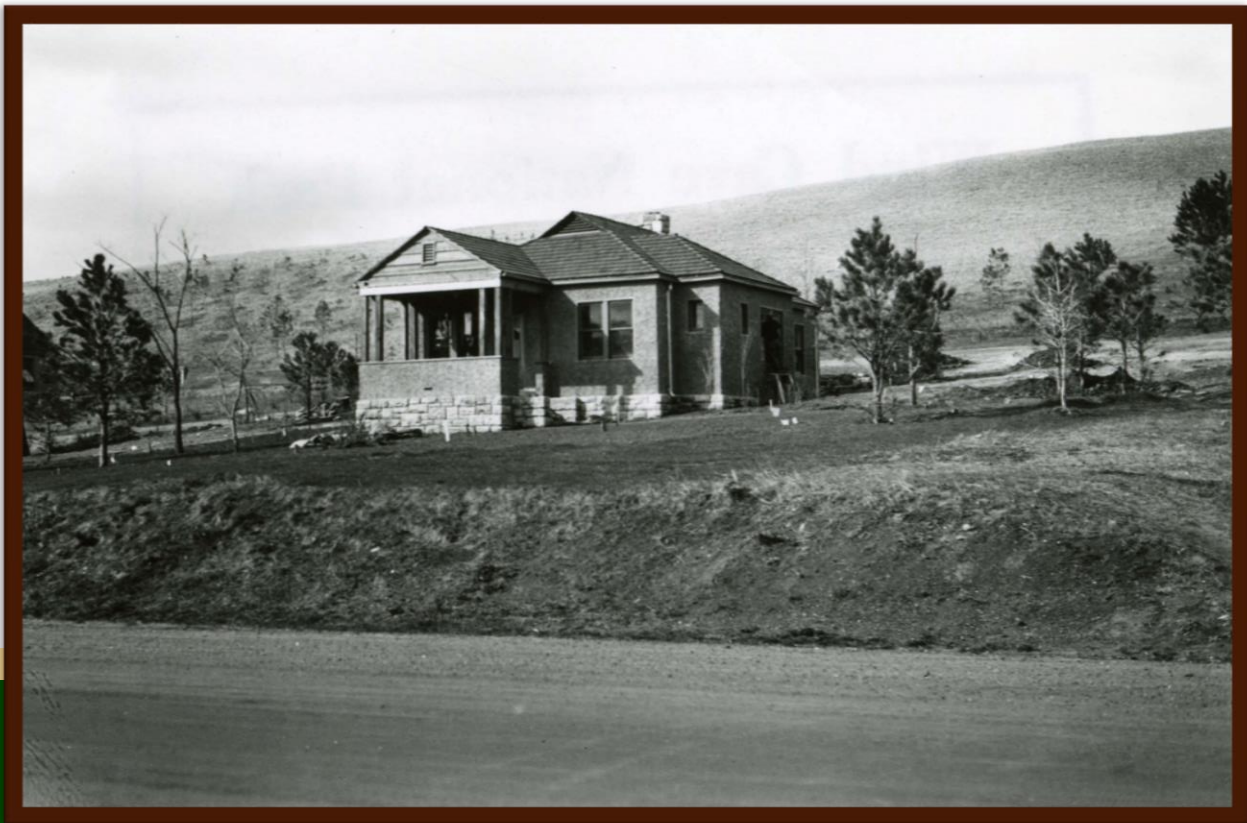
SE
STRUCTURAL
ENGINEERING
ASSOCIATES, INC.
1000 WALNUT
SUITE 1570 KANSAS
CITY, MO 64106
Ph. 816-421-1042
Fax 816-421-1061

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

SUB SHEET NO.
TS1

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-05
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128869
PMIS/PKG NO.
158029
SHEET
8 OF **8**



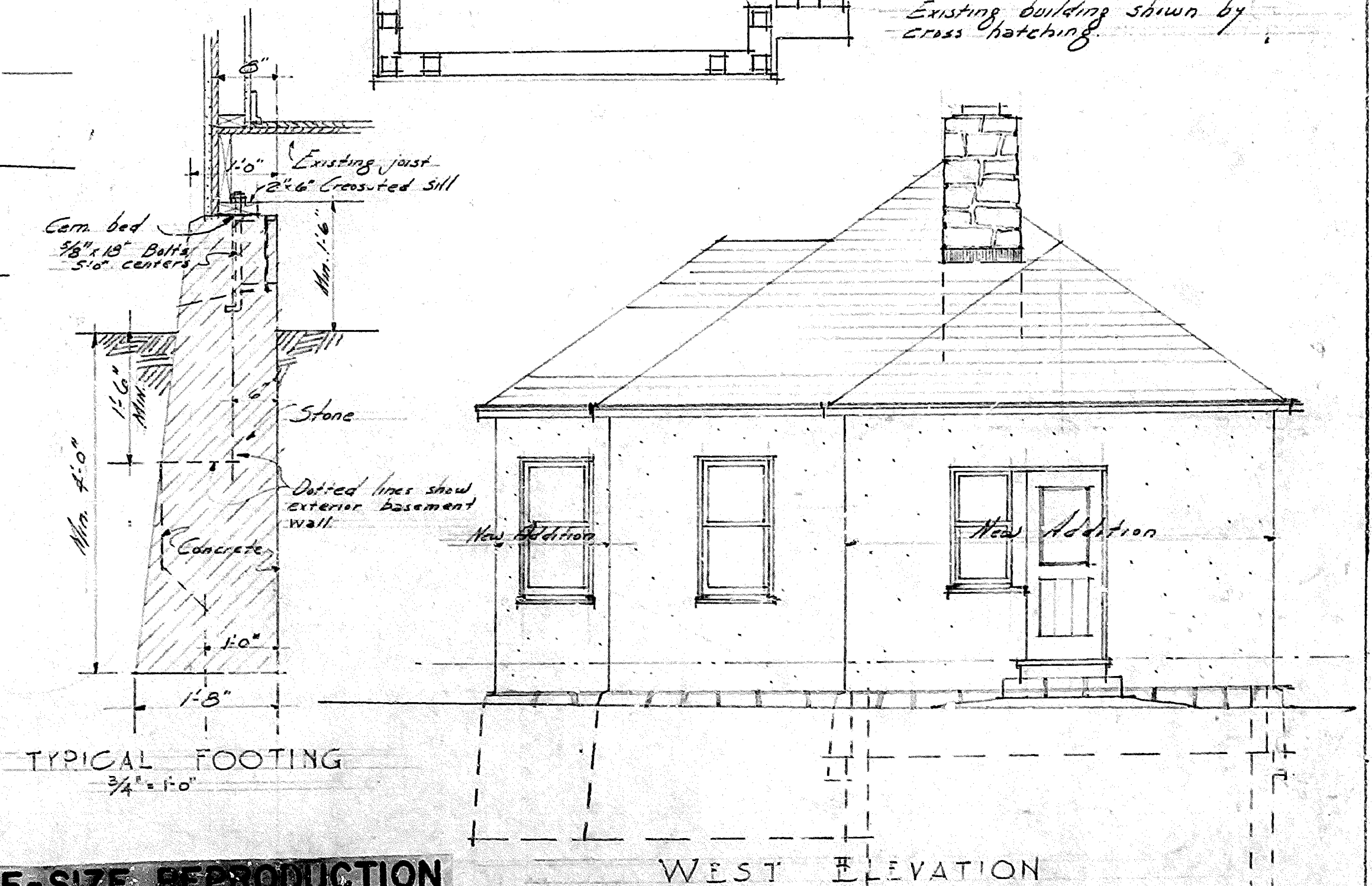
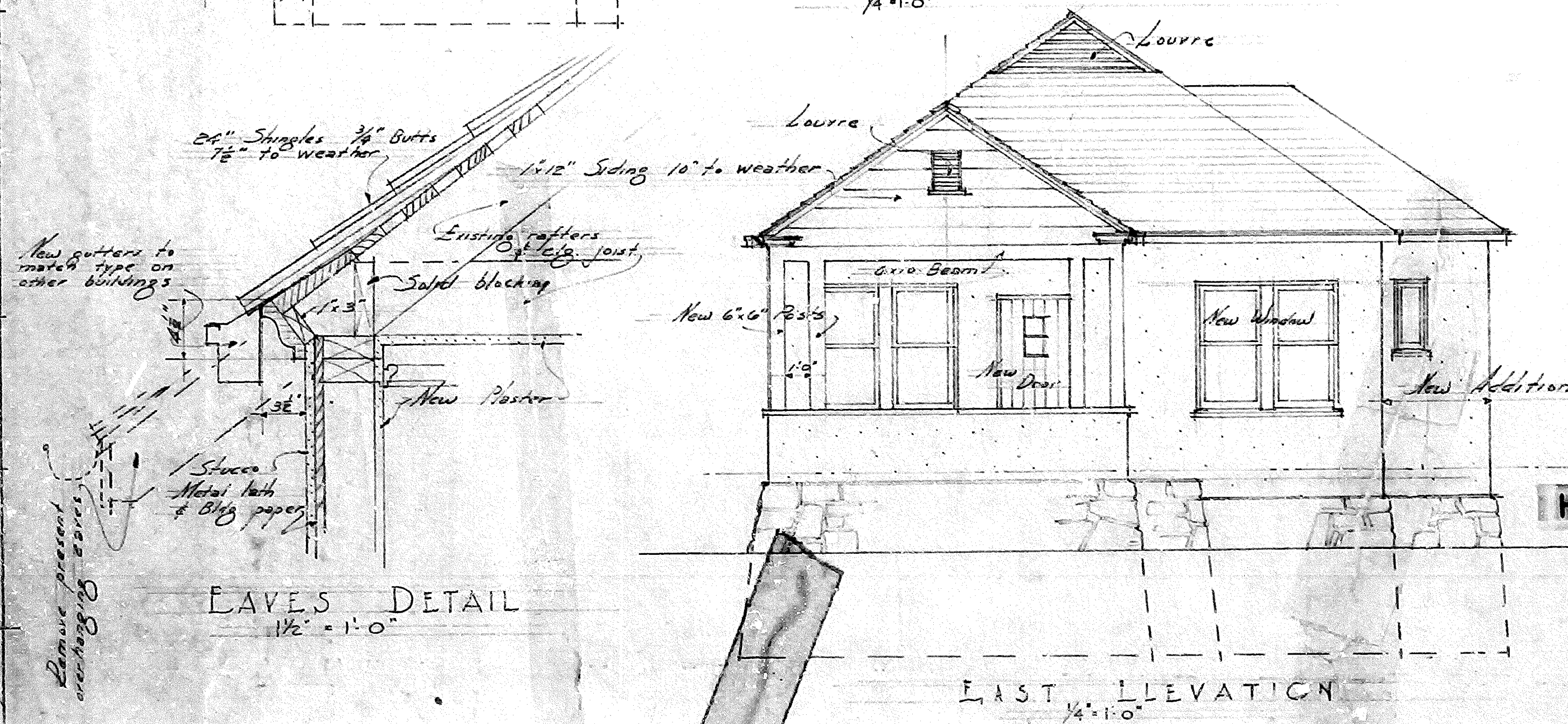
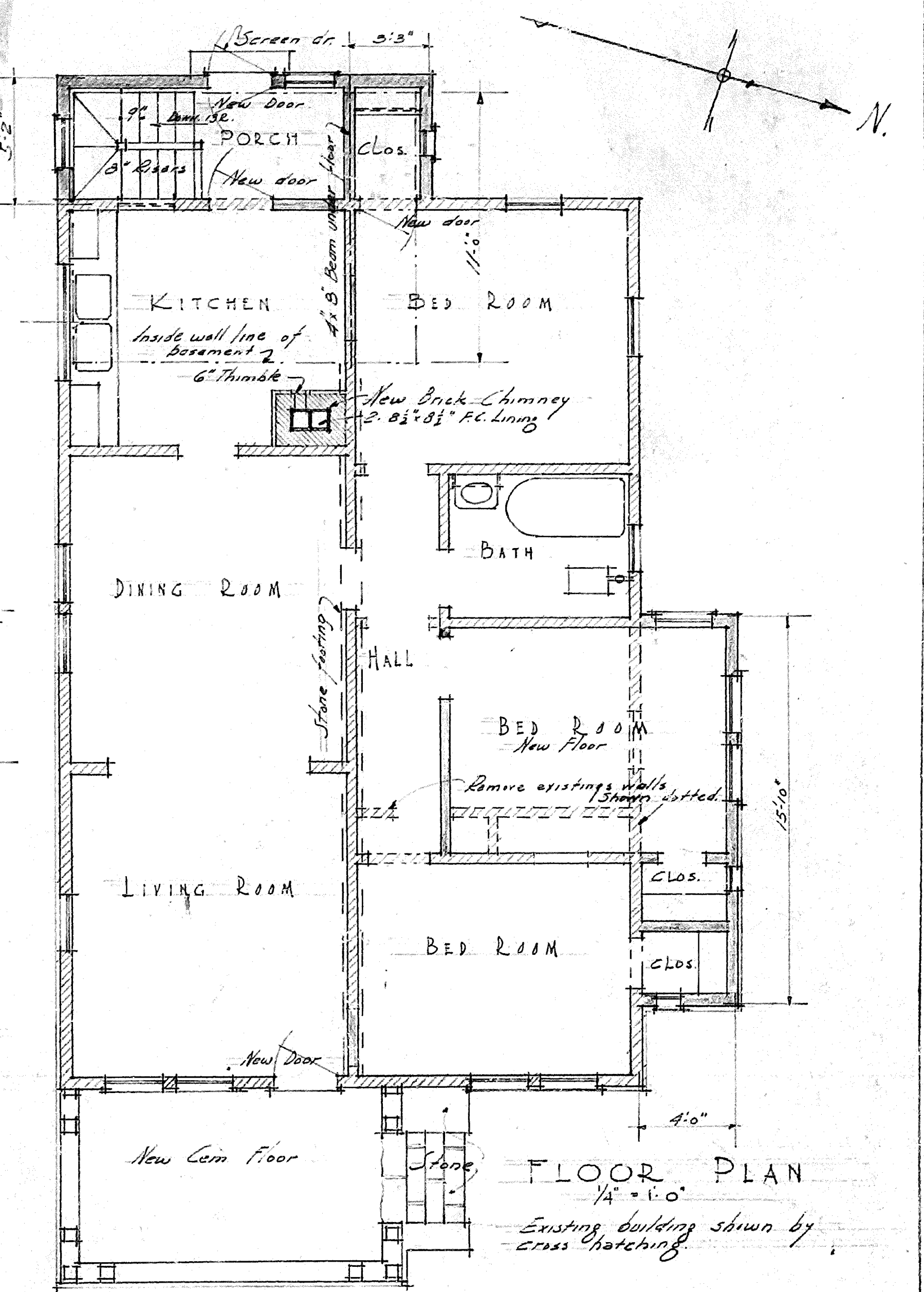
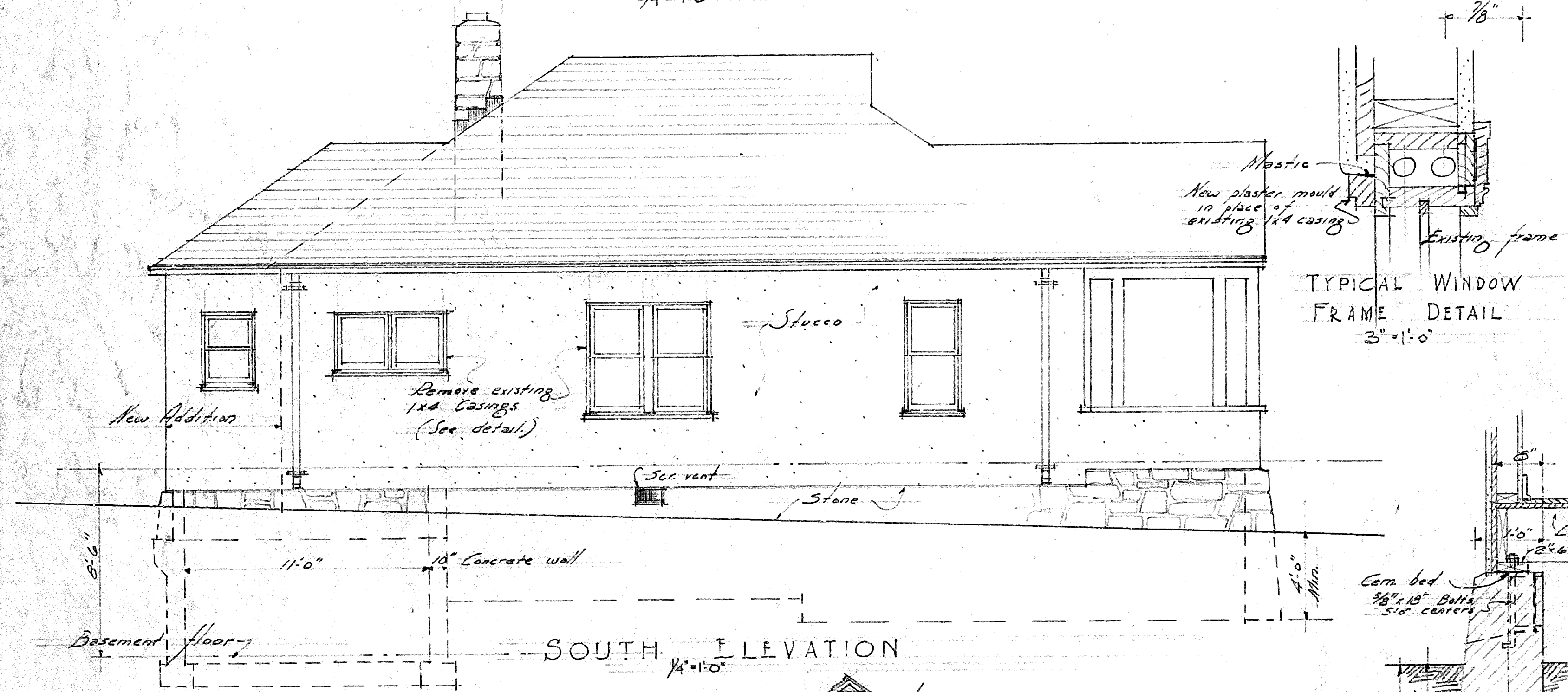
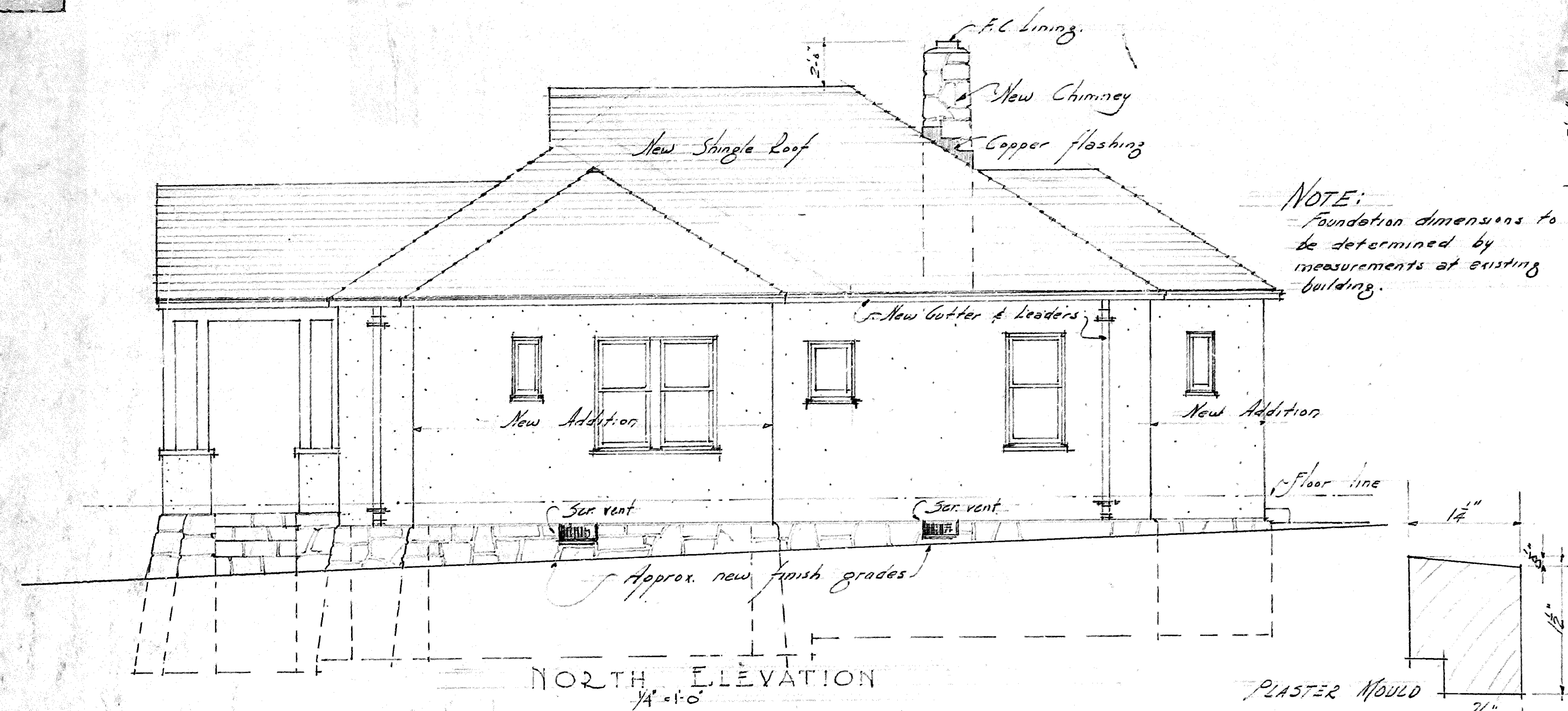
HS-05 1935, May 1. (WICA Museum Collection #WICA 4259)

Appendix A Historic Drawings

Appendix A

HS-05 Plan Pages

[illegible]



HALF-SIZE REPRODUCTION

B.C.W. PROJECT #2
 Recommended by *Edward G. Hupfel* Date 10-25-34
 Cleared for *Ed. G. Hupfel* Date 10-26-34
 Concurred by *Chief Engineer* Date
 Concurred by *Edward G. Hupfel* Date 11-2-34
 Approved by *Frank H. Hupfel* Date 11-10-34

U.S. DEPARTMENT OF INTERIOR
 NATIONAL PARK SERVICE
 WIND CAVE NATIONAL PARK
 ALTERATIONS & ADDITIONS
 TO EMPLOYEE'S RESIDENCE
 DRAWN BY BRANCH OF PLANS AND DESIGN

Date
 Aug. 17, 1934
 Sheet 11/4
 of 1 Sheet
 Draw. No.
 W.C. 3014

Checked by Structural P.R. Specification
 Done by Mr. Architectural Department



HS-05 ca. 1970. (WICA Museum Collection #WICA 7116_b)

Appendix B Historic Photographs

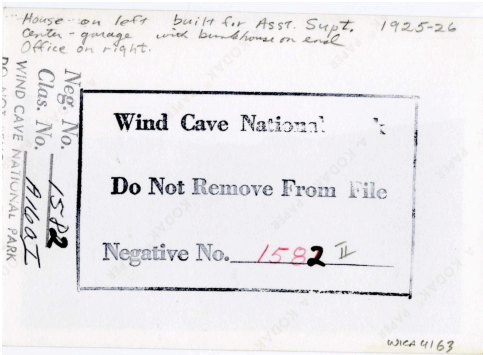
Appendix B: Wind Cave Park-Selected Database and Photo Files *Italicized text added by Deb Sheals in 2015*

Primary *HS#* HS-03
Topic HS-05
HS-05
Photo Date ca. 1926
Date Source *Handwritten date on back of photo*
Photographer

Catalog #
WICA
4163

Manufact. Date

Below: Front of Image. Right: Back of Image



HSR 2015 Notes
HS-05 is on the left; HS-03 in the center.



Park Database Description
Photographic Print and Negative of Headquarters Area. See Also 3462, 3463. 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*

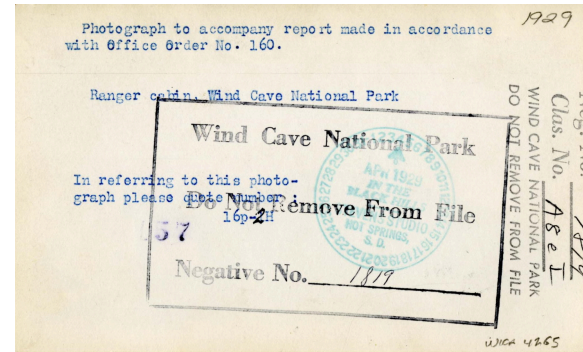
Primary HS# HS-05
Topic
HS-05

Photo Date 1929, Apr. 4.
Date Source Stamp on Photo
Photographer Yes

Manufact. Date 4/29/2014

Catalog #
WICA
4265

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

*HS5 before
being moved
and remodeled.*



Park Database Description

Photographic Print and Negative of Buildings -

Residence #7.

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*

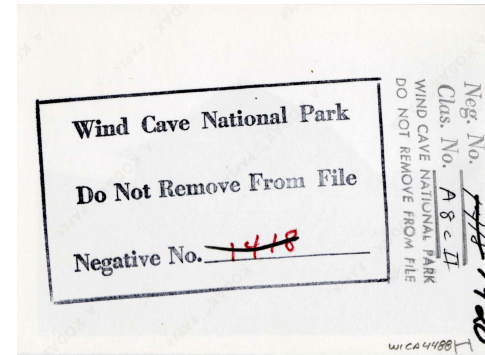
Primary HS# HS-05
Topic
HS-05

Photo Date ca. 1934
Date Source "Manufactured Date"
Photographer

Manufact. Date 12/1/1935

Catalog #
WICA
4488

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Manufactured date says Dec. 1935, but stamped photo #4339 shows this was moved by May 1935.



Park Database Description

Photographic Print and Negative of Buildings - Residence 5 Before Building Was Stuccoed. (Orig. 1920). 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 HS# HS-03
Topic HS-05

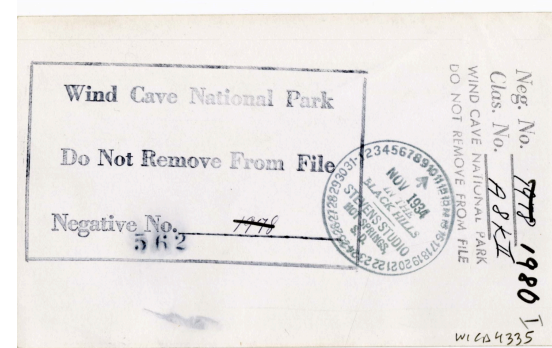
General
HS-03
HS-05

Catalog #
WICA
4335

Photo Date 1934, Nov. 10
Date Source Stamp on Photo
Photographer Stevens Studio

Manufact. Date 9/1/1934

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

*Getting ready to move #5. (left)
Duplicate of 8758. This is a better image.*



Park Database Description

Photographic Print and Negative of Headquarters Area. See Also 2310 - 2312. 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*

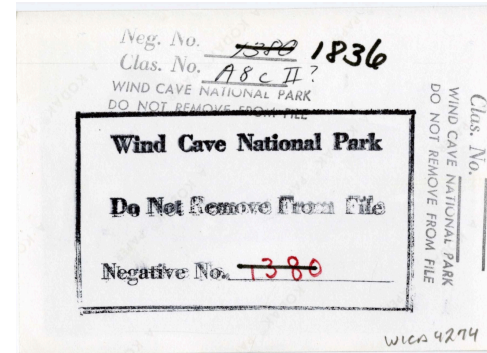
Primary HS# HS-05
Topic
HS-05

Photo Date ca. 1935
Date Source "Manufactured Date"
Photographer

Manufact. Date 1935

Catalog #
WICA
4274

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

*Stamped photo
#4339 shows
this was moved
by May 1935.*

Park Database Description

Photographic Print
and Negative of
Buildings -
Residence #5
Before Building Was
Stuccoed. See Also
3557. 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*

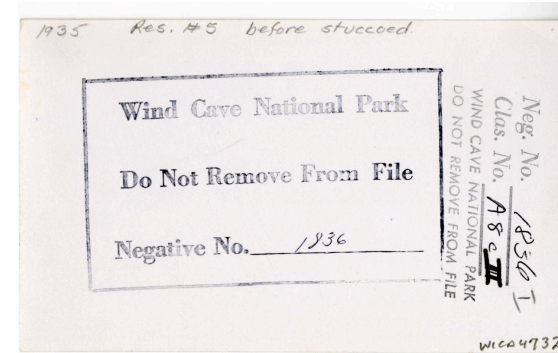
Primary HS# HS-05
Topic
HS-05

Photo Date ca. 1935
Date Source *Handwritten date on back of photo*
Photographer

Manufact. Date 1935

Catalog #
WICA
4732

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

*Stamped photo
#4339 shows
this was moved
by May 1935.*



Park Database Description

Photographic Print and Negative of Buildings - Residence #5 Before Building Was Stuccoed. See Also 1936. 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*

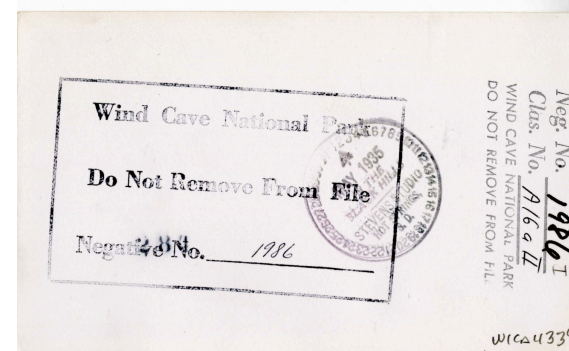
Primary HS# HS-03
Topic HS-05
General
HS-05

Photo Date 1935, May
Date Source Stamp on Photo
Photographer Stevens Studio

Manufact. Date 3/1/1935

Below: Front of Image. Right: Back of Image

Catalog #
WICA
4339



HSR 2015 Notes
*Taken soon after
HS-05 was
moved.*

Park Database Description

Photographic Print and Negative of Headquarters Area. 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

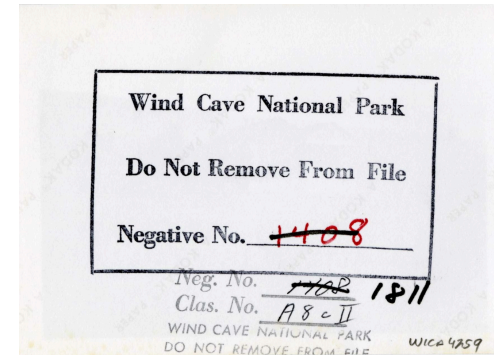
Primary HS# HS-05
Topic
HS-05

Photo Date 1935, May 1
Date Source "Manufactured Date"
Photographer

Manufact. Date 5/1/1935

Catalog #
WICA
4259

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Probably just after being moved and remodeled.



Park Database Description

Photographic Print and Negative of Buildings - Residence #5. See Also 3546.

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*

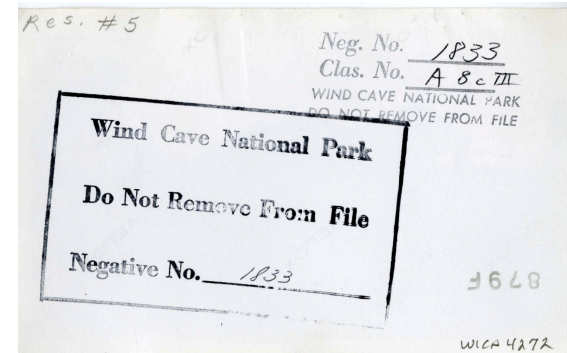
Primary HS# HS-05
Topic
HS-05

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

Catalog #
WICA
4272

Manufact. Date

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Comparable photos were used for a 1937 article written by E. D. Freeland.

Park Database Description

Photographic Print and Negative of Buildings - Residence #5. 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*

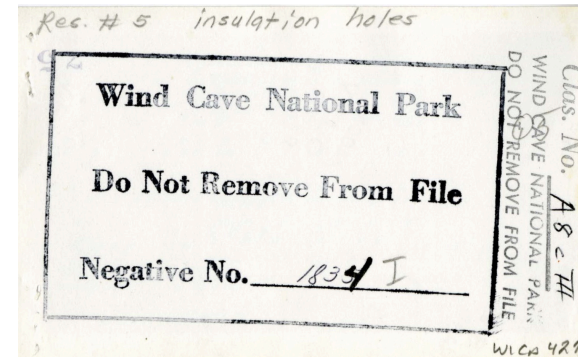
Primary HS# HS-05
Topic
HS-05

Photo Date ca. 1952
Date Source "Manufactured Date"
Photographer

Manufact. Date 1952

Catalog #
WICA
4273

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



Park Database Description

Photographic Print and Negative of insulation in Residential Buildings - View Shows Plastered Holes, Residence #5. See Also 3556. 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 HS# HS-05

Topic

HS-05

Photo Date ca. 1952

Date Source *Handwritten date on back of photo*

Photographer

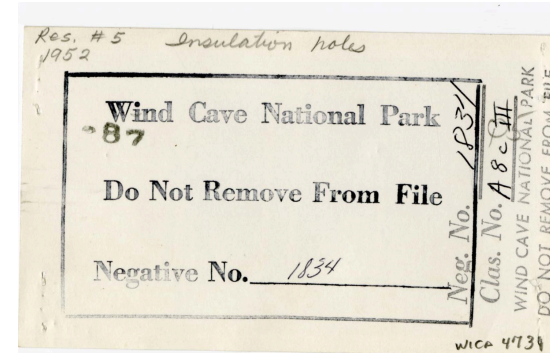
Manufact. Date 1952

Catalog #

WICA

4731

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Park Database Description

Photographic Print and Negative of insulation of Residential Buildings - View Shows Plastered Holes, Residence #5. See Also 1834. 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*

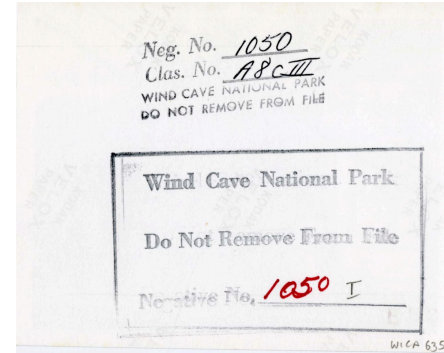
Primary HS# HS-05
Topic
HS-05

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

Manufact. Date 11/1/1959

Catalog #
WICA
6357

Below: Front of Image. Right: Back of Image



HSR 2015 Notes
ca. 1960s. Name
plate on porch
reads "H. (or N)
J. Chittum."



Park Database Description

Photographic Print
and Negative of
Buildings -
Residence #5. See
Also 2349

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

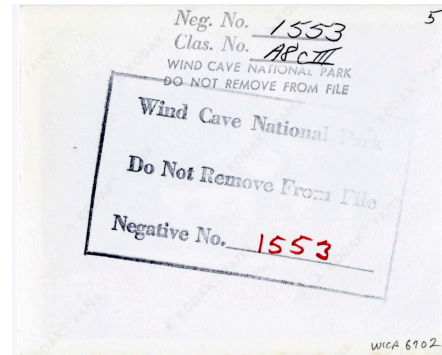
Primary HS# HS-05
Topic
HS-05

Photo Date ca. 1969
Date Source "Manufactured Date"
Photographer

Manufact. Date WINTER1969

Catalog #
WICA
6702

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



Park Database Description

Photographic Print and Negative of Building - Residence #5.

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

Primary	HS#	<i>HS-05</i>	Photo Date	<i>ca. 1970</i>	HSR 2015 Notes
Topic			Date Source	<i>other, see HSR notes</i>	<i>Photo part of</i>
<i>HS-05</i>			Photographer		<i>7116 series.</i>
					<i>VW Bus in</i>
					<i>background ca.</i>
					<i>1960-70s.</i>
Catalog #			Manufact. Date		
<i>WICA</i>					
<i>7116_b</i>					
				<i>Below: Front of Image. Right: Back of Image</i>	



**Park Database
Description**



HS-05 East 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-05 Quarters				
01 00 00 GENERAL CONDITIONS	15%	8,934	-	10,040
02 41 00 DEMOLITION		1,650	-	-
02 50 00 HAZARDOUS MATERIAL ABATEMENT		-	-	1,000
03 30 00 CAST-IN-PLACE CONCRETE		1,596	-	-
04 01 20 MASONRY RESTORATION AND CLEANING		3,187	-	-
04 20 00 MASONRY		-	-	-
05 12 00 STEEL		1,365	-	-
06 10 00 ROUGH CARPENTRY		600	-	-
06 13 00 EXTERIOR RESTORATION		1,450	-	-
06 40 16 INTERIOR ARCHITECTURAL WOODWORK RESTORATION		-	-	-
07 14 00 FLUID-APPLIED WATERPROOFING		-	-	-
07 20 00 STUCCO REPAIRS		4,364	-	-
07 21 00 THERMAL INSULATION		7,128	-	-
07 50 00 ROOFING		-	-	19,931
07 60 00 SHEET METAL FLASHING AND TRIM		-	-	5,145
07 92 00 JOINT SEALANTS		250	-	-
08 11 00 DOOR & FRAMES		850	-	-
08 32 13 STORM WINDOWS		150	-	-
08 52 00 WOOD WINDOWS		15,500	-	14,000
08 71 00 DOOR HARDWARE		-	-	-
08 80 00 GLAZING		-	-	-
09 20 00 PLASTER REPAIR		1,300	-	-
09 21 16 GYPSUM SYSTEMS		-	-	-
09 64 00 FLOORING		-	-	8,109
09 90 00 PAINTING		3,260	-	3,746
10 14 00 SIGNS		-	-	-
10 28 00 INTERIOR REMODEL		12,000	-	15,000
10 44 00 FIRE-PROTECTION SPECIALTIES		-	-	-
21 00 00 FIRE PROTECTION		-	-	-
22 00 00 PLUMBING		750	-	-
23 00 00 HVAC		-	-	-
26 00 00 ELECTRICAL		600	-	-
31 20 00 EARTH MOVING		565	-	-
31 48 13 UNDERPINNING PIERS		-	-	-
32 13 13 CEMENT CONCRETE PAVING		-	-	-
32 92 00 LAWN & GRASSES		212	-	-
33 10 00 WATER DISTRIBUTION		-	-	-
33 30 00 SANITARY SEWERAGE		-	-	-
33 40 00 STORM DRAINAGE		2,783	-	-
33 46 16 FOUNDATION DRAINAGE SYSTEMS		-	-	-
subtotal		68,495	-	76,971
Contractor's Fee	10%	6,850	-	7,697
subtotal		75,345	-	84,668
Design/Estimate Contingency	25%	18,836	-	21,167
subtotal		94,181	-	105,835
Escalation to Mid-Point - 04/15/2017	3.7%	3,459	-	3,887
TOTAL		97,640	-	109,722

*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-05 Quarters							
02 41 00 DEMOLITION							
Immediate							
Remove Pellet Stove and all related accessories and patch roof and walls	1	EA	1,500.00	1,500	1,500		
Remove Downdraft Chimney Cap	1	EA	150.00	150	150		
				1,650	1,650	0	0
02 50 00 HAZARDOUS MATERIAL ABATEMENT							
Long Term							
Hazardous Material Abatement Testing	1	LS	1,000.00	1,000			1,000
Extent of hazardous materials needs to be determined before accurate estimate can be rendered				1,000	0	0	1,000
03 30 00 CAST-IN-PLACE CONCRETE							
Immediate							
Clean and Seal Concrete Slab Front Porch	117	SF	2.00	234	234		
Demo and Install New Concrete Slab	136	SF	10.00	1,362	1,362		
				1,596	1,596	0	0
04 01 20 MASONRY RESTORATION AND CLEANING							
Immediate							
Repoint Foundation Walls	134	SF	8.00	1,070	1,070		
Clean Foundation Walls	178	SF	6.00	1,070	1,070		
Mortar Wash Foundation Walls	45	LF	8.00	358	358		
Repoint South Chimney	29	SF	8.00	236	236		
Clean South Chimney	59	SF	6.00	354	354		
Restore Mortar Wash @ Top of Chimney	1	EA	100.00	100	100		
				3,187	3,187	0	0
04 20 00 MASONRY							
				0	0	0	0
05 12 00 STEEL							
Immediate							
Pipe Railing @ Stair	15	LF	65.00	975	975		
Handrail @ Porch Steps	6	LF	65.00	390	390		
				1,365	1,365	0	0
06 10 00 ROUGH CARPENTRY							
Immediate							
Repair Floor Joist and Seal Old Access Hole	1	EA	100.00	100	100		
Reinforce Ceiling Joists in Attic	1	EA	500.00	500	500		
				600	600	0	0
06 13 00 EXTERIOR RESTORATION							
Immediate							
Porch Wood Repairs	1	LS	250.00	250	250		
Install Porch Columns	3	EA	400.00	1,200	1,200		
				1,450	1,450	0	0
06 40 16 INTERIOR ARCHITECTURAL WOODWORK RESTORATION							
				0	0	0	0
07 14 00 FLUID-APPLIED WATERPROOFING							
				0			0
				0	0	0	0
07 20 00 STUCCO REPAIRS							
Immediate							
Misc Stucco Repairs	145	SF	30.00	4,364	4,364		
				4,364	4,364	0	0
07 21 00 THERMAL INSULATION							
Immediate							
Additional Insulation In the Attic	1,036	SF	1.00	1,036	1,036		
Insulation in Floor Joists in Crawl Space 002	546	SF	2.00	1,092	1,092		
Test Exterior Walls for Insul and Patch holes ALLOWANCE	1	LS	5,000.00	5,000	5,000		
				7,128	7,128	0	0
07 50 00 ROOFING							
Long Term							
Demo Roofing and Install New Decra Steel Roofing System	1,661	SF	12.00	19,931			19,931
				19,931	0	0	19,931
07 60 00 SHEET METAL FLASHING AND TRIM							
Long Term							
New Custom Box Gutters	147	LF	25.00	3,675			3,675
Custom Downspouts	98	LF	15.00	1,470			1,470
				5,145	0	0	5,145
07 92 00 JOINT SEALANTS							
Immediate							
Misc Exterior Caulking	1	LS	250.00	250	250		
				250	250	0	0

DESCRIPTION	QUANTITY	UNIT	\$	TOTAL	Immediate	Short Term	Long Term
HS-05 Quarters							
08 11 00 DOOR & FRAMES							
Immediate							
New access door to Crawl Space	1 EA	:	850.00	850	850		
				850	850	0	0
08 32 13 STORM WINDOWS							
Immediate							
Repair Storm Window	1 EA	:	150.00	150	150		
				150	150	0	0
08 52 00 WOOD WINDOWS							
Immediate							
Replace Windows w/ Historically Appropriate Windows	7 EA	:	2,000.00	14,000	14,000		
Restore Window 107 and Fabricate New Storm Window	1 EA	:	1,200.00	1,200	1,200		
Restore Window 100 114 108	3 EA	:	75.00	225	225		
Repair Storm Door 100-1	1 EA	:	75.00	75	75		
Long Term							
Replace Windows w/ Historically Appropriate Windows	7 EA	:	2,000.00	14,000			14,000
				29,500	15,500	0	14,000
08 71 00 DOOR HARDWARE							
				0	0	0	0
08 80 00 GLAZING							
				0			0
				0	0	0	0
09 20 00 PLASTER REPAIR							
Immediate							
Repair Interior Wall Surface	1 LS	:	300.00	300	300		
Repair Cracks in Living Room 100 Ceiling	1 LS	:	1,000.00	1,000	1,000		
				1,300	1,300	0	0
09 21 16 GYPSUM SYSTEMS							
				0			0
				0	0	0	0
09 64 00 FLOORING							
Long Term							
Restore Wood Floors in 100, 101,102,103,105 (Demo Laminate Flooring)	951 SF	:	7.00	6,657			6,657
New Carpet in 106, 107, 109	41 SY	:	35.00	1,452			1,452
				8,109	0	0	8,109
09 90 00 PAINTING							
Immediate							
Paint Walls and Ceiling @ Room 106	503 SF	:	1.50	755	755		
Misc Stucco Painting	1,455 SF	:	1.25	1,818	1,818		
Stain Int Windows	7 EA	:	75.00	525	525		
Paint/Stain Wood Trim/Siding	32 SF	:	5.00	162	162		
Long Term							
Paint Walls	3,746 SF	:	1.00	3,746			3,746
				7,006	3,260	0	3,746
10 14 00 SIGNS							
				0			0
				0	0	0	0
10 28 00 INTERIOR REMODEL							
Immediate							
Remodel Bathroom 108 (new fixtures, flooring and finishes) ALLOWANCE	1 EA	:	12,000.00	12,000	12,000		
Long Term							
Remodel Kitchen 102	1 EA	:	15,000.00	15,000			15,000
				27,000	12,000	0	15,000
10 44 00 FIRE-PROTECTION SPECIALTIES							
				0	0	0	0
21 00 00 FIRE PROTECTION							
not applicable				0	0		
				0	0	0	0
22 00 00 PLUMBING							
Re-Route Plumbing Vent in Kitchen and vent through roof	1 EA	:	250.00	250	250		
Re-Route Plumbing Vent in Restroom and vent through roof	1 EA	:	500.00	500	500		
				750	750	0	0
23 00 00 HVAC							
not applicable							
				0	0	0	0
26 00 00 ELECTRICAL							
Immediate							
Install GFCI Outlets @ Existing Locations	3 EA	:	150.00	450	450		
Replace Glass Globe on Light Fixture	3 EA	:	50.00	150	150		
				600	600	0	0

DESCRIPTION	QUANTITY	UNIT	\$	TOTAL	Immediate	Short Term	Long Term
HS-05 Quarters							
31 20 00 EARTH MOVING							
Immediate							
Regrade at West and South Side of House	71 SY		8.00	565	565		
				565	565	0	0
31 48 13 UNDERPINNING PIERS				0	0		
				0	0	0	0
32 13 13 CEMENT CONCRETE PAVING				0	0		
				0	0	0	0
32 92 00 LAWN & GRASSES							
Immediate							
Seed	71 SY		3.00	212	212		
				212	212	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							
Immediate							
Install French Drain	80 LF		35.00	2,783	2,783		
				2,783	2,783	0	0
33 46 16 FOUNDATION DRAINAGE SYSTEMS				0			0
				0	0	0	0