

Historic Housing Area Historic Structures Report

HS-07 Quarters

Wind Cave National Park

Volume VI of VIII



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NPS PMIS # 158029

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Cover Photo:

HS-07 Quarters Existing Structure, View Southeast. (SRJA 2014)

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Introduction

Volume I of the Wind Cave National Park Historic Housing Area Historic Structures Report (HSR) covers the history of the development of the park and the historic housing area. This individual Volume VI is to serve as a guide for the future caretaking of this significant property, HS-07 Quarters. This volume focuses on the individual history, review of existing conditions and treatment recommendations unique to HS-07.

The one-story HS-07 Quarters was originally built in 1932. The small 867 square feet residence currently serves as seasonal housing for park staff. The house is built into the hillside and faces east toward the Administration Building with a gabled front porch. HS-07 is in nearly original 1932 form, with very few alterations. The house is visible from the public right of way and should be preserved in its current condition to the extent possible.

The shell of the HS-07 is in overall good condition, having been very well maintained for the last 83 years. Raised grade along the west and north sides of the house is causing deterioration of the stucco exterior. The stone foundation requires only spot repointing, but also requires monitoring for settlement. Stucco cracking is prevalent throughout the exterior, especially at the porch and west elevations. The original steel casement windows are missing and require replacement in several of the rooms, in order to assist with the energy efficiency of the house. Besides these issues, the house requires basic maintenance and rehabilitation.

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

Significant Features

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

Exterior:

- Site – Sloped site. House built into grade.
- Massing – One story with gable and hipped roofs.
- Roofline – Gable and hipped roofs.
- Basic Footprint – Rectangular with stepped projections to the north.
- Porches, stoops and stairs – Gabled front porch with stone foundation walls and steps, stucco porch walls and tapered wood columns.
- Stonework—Native stone laid in a random ashlar pattern. Slightly-battered exposed foundations.
- Chimneys – Native stone laid in a random ashlar pattern.
- Stucco – Spanish stucco.
- Gable – Wood horizontal siding with louver.
- Trim – Wood cornice, typical throughout historic housing area.

- Patterns of fenestration – Original window and door openings.
- Windows – No original window sash remain. Original trim may remain under the metal panning.
- Doors – Original V-joint tongue and groove front door with original hardware.
- Bulkhead – Stone bulkhead with wood door.

Interior:

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

History and Significance of HS-07 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-07, now known as Quarters 7, was built in 1932, to provide housing for permanent employees at Wind Cave National Park (Figure 9). The first architectural plans for the building were drawn in August of 1931 by “H.W.B” of the National Park Service (NPS) Landscape Division, and construction was concluded by February 1932.^{1, 2} H. W. B. was probably Howard Baker, a landscape architect from the Denver office of the Landscape Division. Although Baker has been credited with the design of many of the buildings in the original housing area, the architectural drawings for this house are the only set of historic plans to bear his initials.

This was one of the first houses built for permanent staff at Wind Cave National Park, and was one of the first to utilize the uniform architectural design style established by the Landscape Division ca. 1931. The design style referred to as “northern Spanish” by Baker and others at the time, featured rustic stone work and textured Spanish stucco walls.

Superintendent Edward Freeland wrote in this 1932 annual report that construction projects for that year consisted of one residence (HS-07) and a two-car garage on the superintendent’s residence (since removed). He also noted that “Both buildings are of native stone and Spanish stucco, conforming to the approved design.”³ CCC crews installed new landscaping soon after construction was completed, following a landscape plan drawn by S. Serrano of the Denver office of the National Park Service Branch of Plans and Design (Figures 12 and 13).

As is the case with several of the houses in the area, the basement is a later addition (Figure 12); it was added by CCC crews in 1937.⁴ Regional Office II designed plans for an addition to this house in 1939, but that work was never completed. (Funding and visitation dropped considerably with the onset of World War II). New windows were installed in 1952, and in 1959 the original screened back porch was enclosed.

This is one of several houses targeted for demolition in the early 1960s. A 1961 management plan which called for the demolition of this and other houses across from the administration building as soon as they had “served reasonably their useful lives.” This plan was not followed, and in 1986 all of the buildings in the housing area, including this one, were reclassified as “Historical Buildings.”⁵ HS-07 Quarters is a contributing resource in the Wind Cave Historic District and it is significant as the second residence in the park to utilize the uniform architectural design style prescribed by the Landscape Division and also for the link to the early years of park development and the work of the CCC.

¹ Appendix A, HS-07, WICA_108_1000A [id278465].

² February, 1932 Superintendent’s Monthly Report, Wind Cave National Park, (Copy on file at the WICA Library). Hereafter referred to by month and year as WICA Superintendent’s Monthly Report.

³ 1932 Superintendent’s Annual Report, Wind Cave National Park. (Copy on file at the WICA Library.)

⁴ January, 1937 WICA Superintendent’s Monthly Report.

⁵ “Master Plan for the Preservation and Use of Wind Cave National Park,” Mission 66 Edition, (WICA) November 1961: 9.

Current Title HS-07 Quarters 7 FMSS Asset Number 27934 LCS ID 010745		
Historic Name	Date of Name	Source of Name and Notes
Employee's Residence	1931	Plans
Employee's Residence #1	1940	1940 Master Plan
Q-07	ca. 1949-1995	Maintenance Department Files
Residence 7	1963	1963 Site Plan
#7 Residence	1976	Classified Structure Field Inventory Report
Residence 1932	1988	1988 Management Plan
Employee's Residence (HS-7)	1995	National Register Nomination
Quarters 7	2000	Current WICA Staff, LCS
H-B-07 Employee Residence (HS-7)	2004	Cultural Landscape Report

Figure 1. Table of Previous Titles

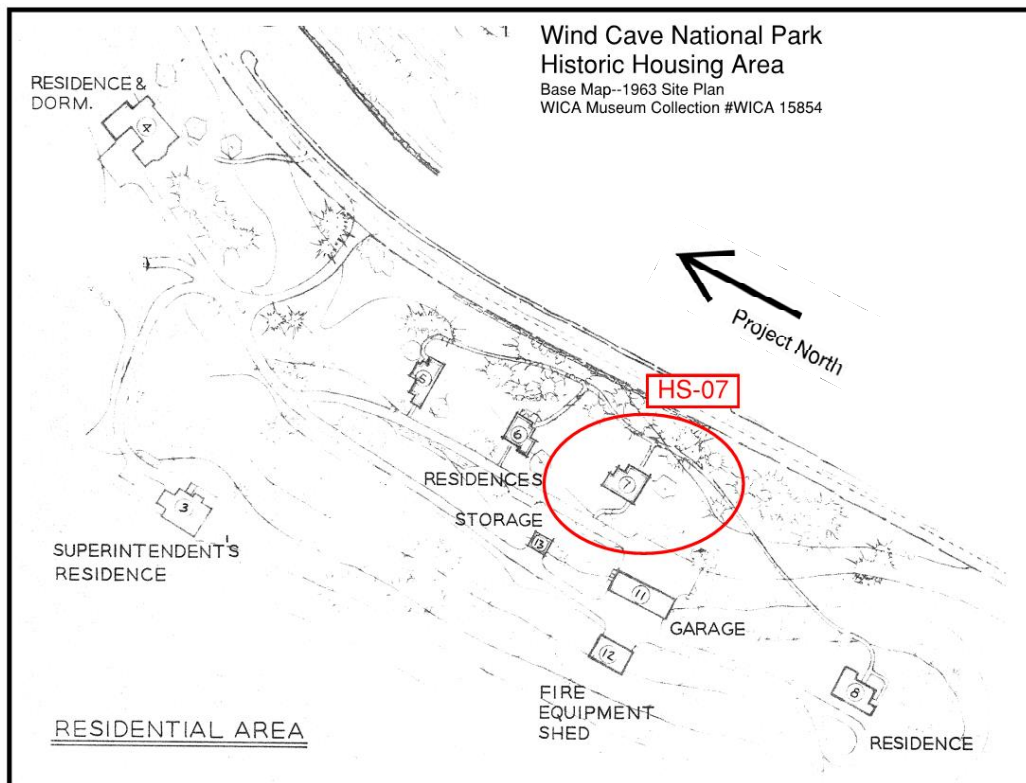


Figure 2. Location Map

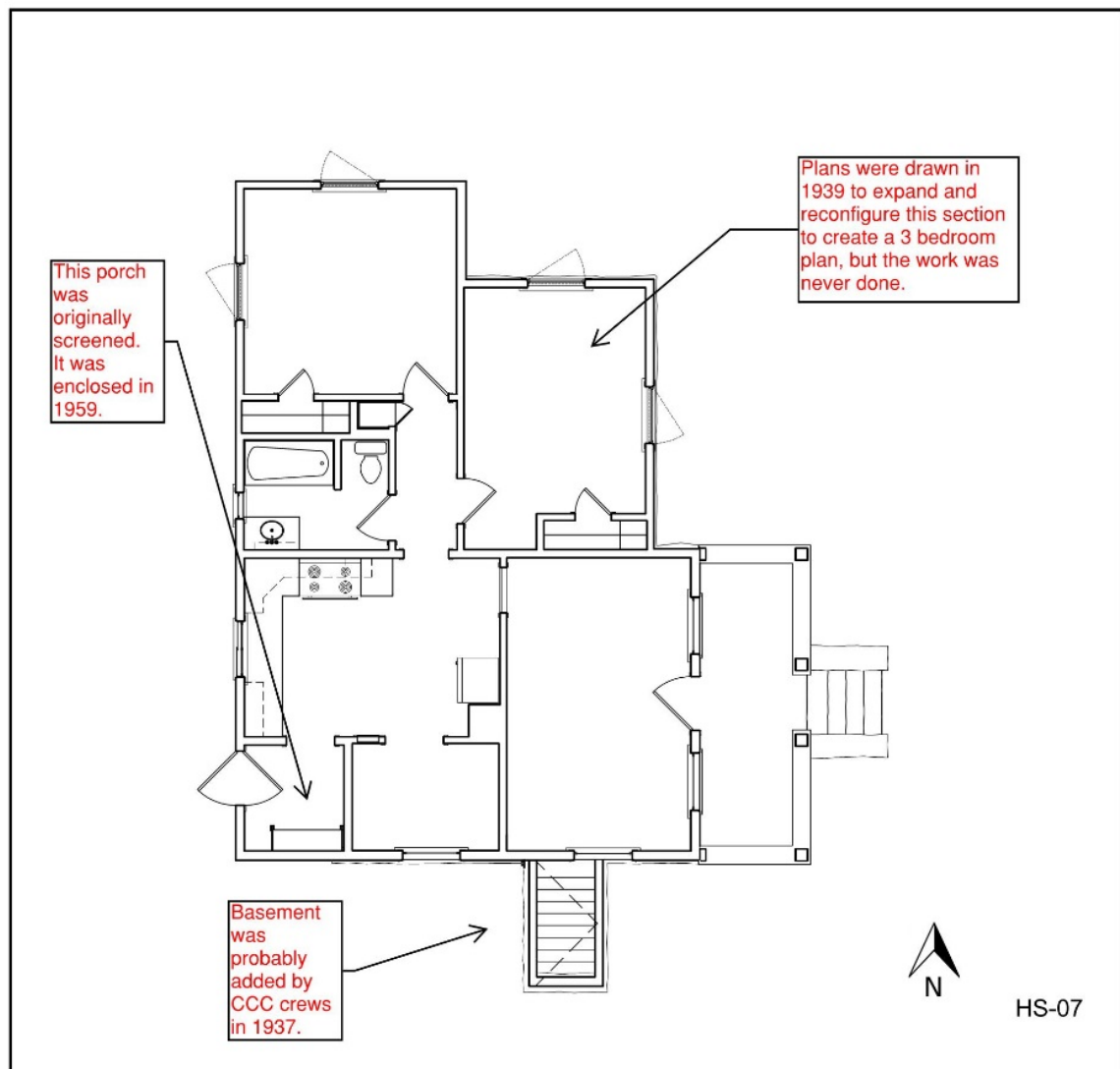


Figure 3. Summary of Alterations

Timeline of Major Events and Alterations.

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

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

1931

August 31, 1931. Plans completed for construction of Employee's Residence (HS-07). Plans were drawn by "H.W.B." of the National Park Service Landscape Division, recommended by Thomas C. Vint, Chief Landscape Architect, possibly 9/5/1931. [Appendix A.]

December 9, 1931. Superintendent monthly report of January 7, 1932 says work on residence (HS-07) began on Dec. 9th and building was fully enclosed and ready for interior finishes by the date of the report. [January, 1932 WICA Superintendent's Monthly Report.]

Original cost \$5,400.00 [Maintenance Department Files.]

1932

February 26, 1932. Work on the new employee's residence (HS-07) completed and accepted, with one day to spare on the contract. [February, 1932 WICA Superintendent's Monthly Report.]

1932. Annual superintendent's report indicates construction for the year consisted of one residence (HS-07) and a 2-car garage on the superintendent's residence. (Since removed) "Both buildings are of native stone and Spanish stucco, conforming to the approved design." [1932 WICA Annual Superintendent's Report.]

1933

"Original building plans show that the grade at the rear of the structure was excavated to accommodate the building. A Master Plan narrative, believed to be 1933, indicates this building did not have basement when new." [Karsmizki, "Administrative and Utility Area NR Nomination," 7.49.]

1934

October 15, 1934. Plans completed for landscape planting of Employee's Residence (HS-07). Plans were drawn by "S.S." of the National Park Service Branch of Plans and Design, recommended by W. G. Carnes, Chief Architect, 10/23/1934, and approved by Arno B. Camerer, Director on 11/15/1934. S. S. was probably Sam Serrano, see Jan. 20, 1937 entry below. [Appendix A.]

1937

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

1939

Plans and historic photographs show the south corner of the building originally contained a screen porch. The porch was still in place in 1939. [Appendix A.]

November 22, 1939. Plans completed for addition to Employee's Residence (HS-07). Plans were drawn by "L. E. Wilkie" of the National Park Service Branch of Plans and Design, Regional Office 2, recommended by Wilford G. Hill, Acting Regional Landscape Architect, 12/12/1939. Note on plan reads "This alteration never made, see 1000b." [Appendix A.]

1949

Value \$8,950.00 [Maintenance Department Files.]

1951

Warm air heating system, oil burning. (Plan NP-WC 2112A); Hot water heating system - piping replaced. Rewired. [Maintenance Department Files.]

1952

May 1952. Installed vacuum breaker flush valve on toilet, 1" shut off valve on main water line, two P traps in kitchen and bath room-traps to have cleanout and drain plug, installed drain stopper unit in lavatory sink in bathroom (contract). [Maintenance Department Files.]

September 9, 1952. Install fiberglass between walls and attics. Holes drilled through stucco and plugged. Install new check-rail wood windows, painting inside and out. [Maintenance Department Files.]

1955

Remodel, Plans: NP WC 202. Inside Entrance. [Maintenance Department Files.]

1958

Porch remodeled to utility room, kept original beaded ceiling, removed window openings.

[Karsmizki, "Administrative and Utility Area NR Nomination," 7.49.]

Paint and stain outside, repair stucco. Redecorate bath, new flooring and stove. [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.]

1974

June 1974 Rewire; October 1974 Re-shingle. [Maintenance Department Files.]

1980-81

Storm windows and storm doors, new kitchen cabinets and counters. [Maintenance Department Files.]

1982

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

1983

Air temp burner installed [Maintenance Department Files.]

1985

July. Removed heater and vents.

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

1986

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

1987

October 1987. Purchase and install wood-burning stove. (Recorded date 5 Jan 1989) [Maintenance Department Files.]

1989

January 5, 1989. Install Woodburning Stove. [Maintenance Department Files.]

November 14, 1989. Installed wood pellet stove, tested for radon. (Recorded 3 Jan 1990) [Maintenance Department Files.]

1992

August 1992. New Carpet.

1993

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

1994

June 1994. Painting Contract

Photos in Maintenance Department Records. [Maintenance Department Files.]

1996

Rehab.

Lead abatement completed, new flooring installed. [Maintenance Department Files.]

1998

February 1998. Install new pellet stove.

2004

New egress windows installed in the bedrooms, Park Project # WICA-04-13.

Historic Photos



Figure 4. HS-07, ca.1930s, looking west. (WICA 4208)

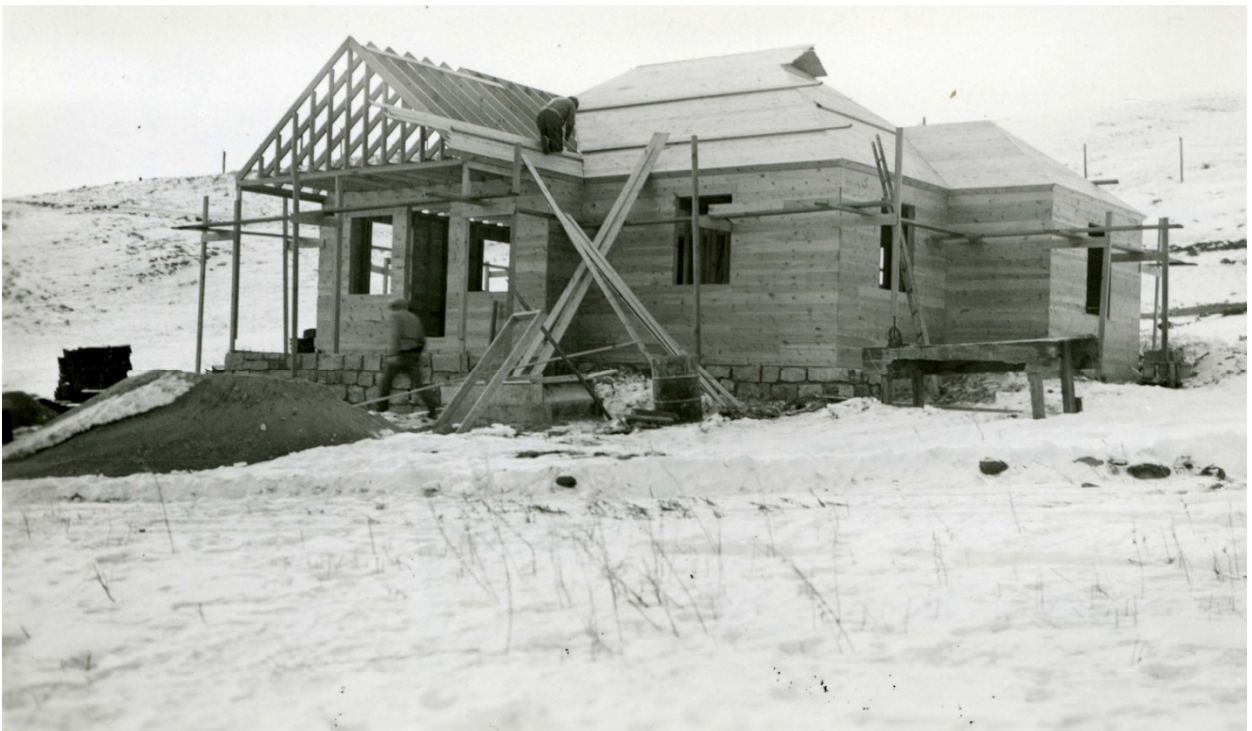


Figure 5. HS-07, ca.1932, Jan 4, looking west. (WICA 4271)



Figure 6. HS-07, ca.1932, Jan 8, looking northwest. (WICA 4729)



Figure 7. HS-07, 1932, Jan. 8, looking west. (WICA 4489)



Figure 8. HS-07, ca. 1932, Mar. 1, looking southwest. (WICA 4723)

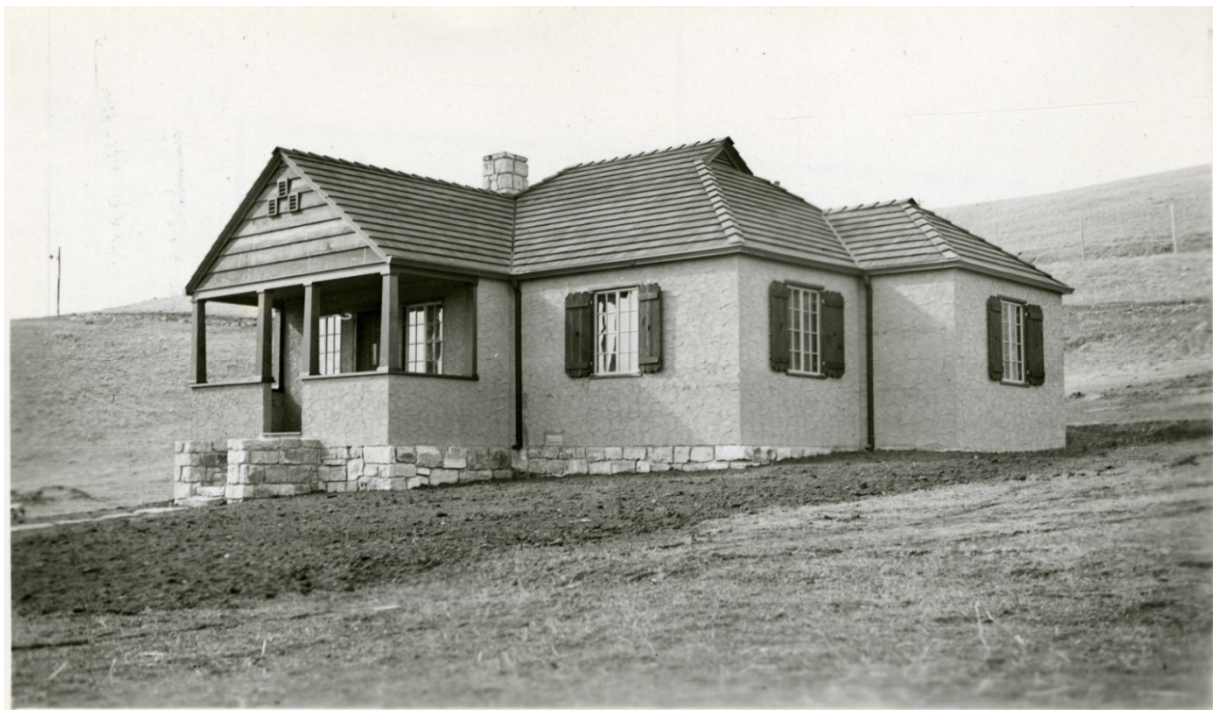


Figure 9. HS-07, 1932, Mar. 1, looking southwest. (WICA 4724)



Figure 10. HS-07. 1932, March 8, looking northwest. (WICA 4270)



Figure 11. HS-07, 1933, Mar. 7, looking south. (WICA 4308)

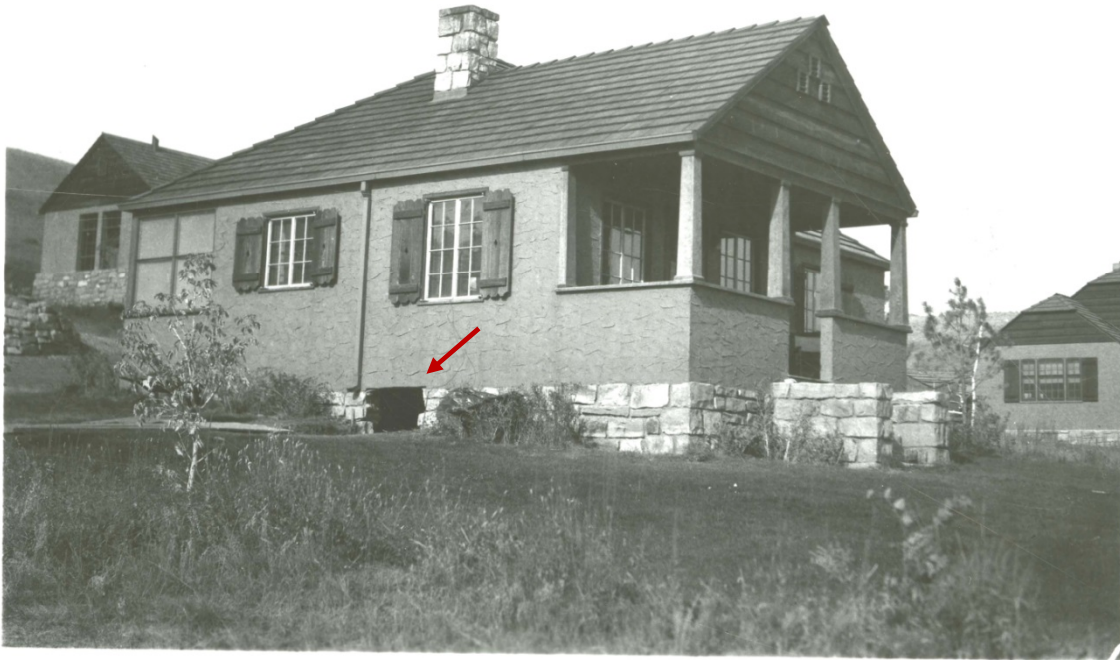


Figure 12. HS-07, ca. 1930s, looking north. Note the hole in the south foundation wall where the bulkhead door is likely under construction. (WICA 4730)



Figure 13. HS-07. ca. 1940s, looking west. (WICA 4264)

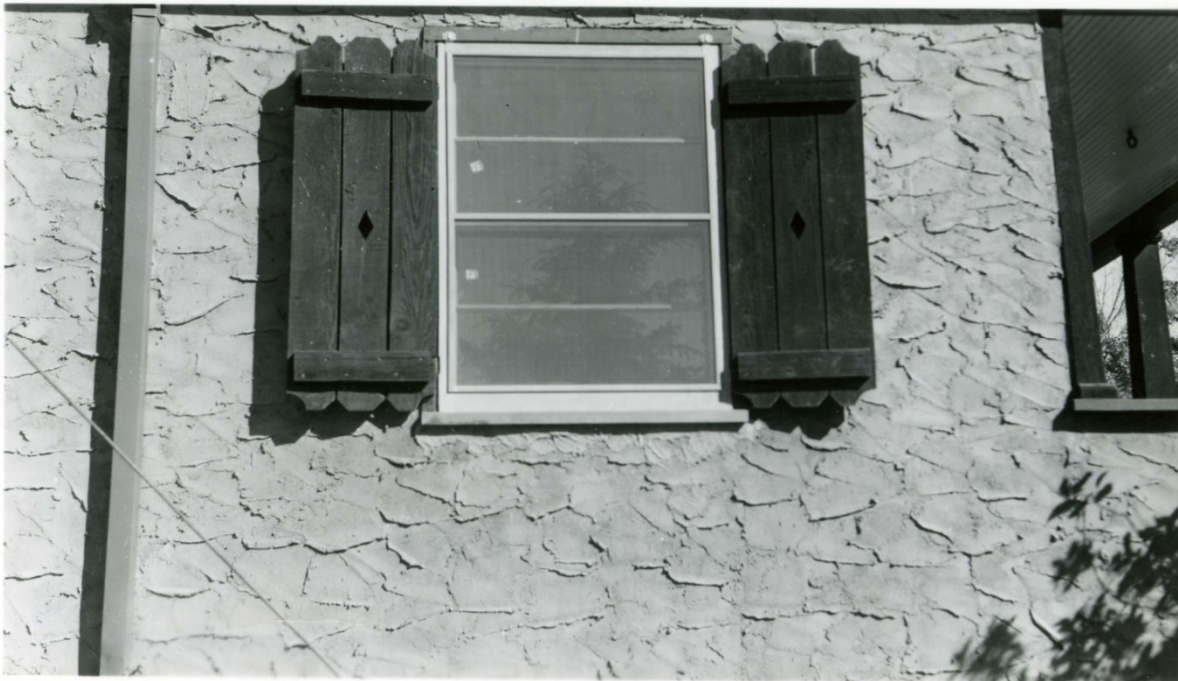


Figure 14. HS-07, 1952, south window. (WICA 4266)



Figure 15. HS-07, ca.1952, looking north.
The counterweight post to the left of the bulkhead still exists. (WICA 6853)



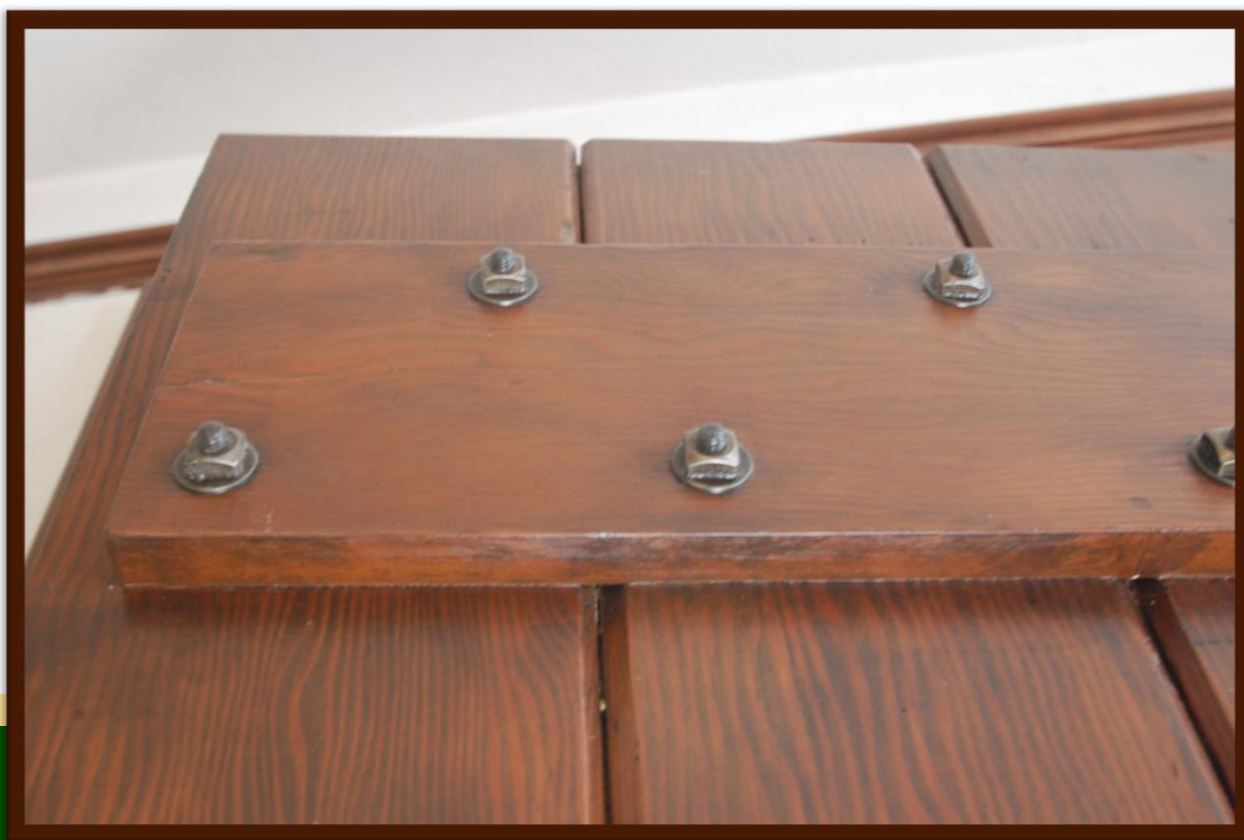
Figure 16. HS-07, ca.1959, Nov. 1, looking west. (WICA 6320)



Figure 17. HS-07, ca.1969, looking east. (WICA 6705)



Figure 18. HS-07, ca.1969, looking west. (WICA 6706)



HS-07 Entry door detail. (SRJA 2014)

Existing Conditions

HS-07 Quarters Existing Conditions

HS-07 Quarters was constructed in 1932 and is the southern-most of the three houses closest to the Administration Building. This is a single story house with a partial basement.

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

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



Figure R1. West-facing roof. (SRJA 2015)

Roof

The original wood shingle roof was replaced with asphalt shingles for the first time in 1982. The existing asphalt shingle roof dates to 2002 and appears to be in good overall condition. The roof is a Heritage 40 Laminated asphalt shingle, manufactured by Tamko Roofing in the Rustic Cedar color.⁶ The K-style aluminum gutters and downspouts were also installed at that time. Aside from the stone chimney, two roof penetrations include a vent for the kitchen sink and a vent for the bathroom – both on the west-facing roof. Also, there is no cricket visible behind the stone chimney to shed water. The original 1931 construction drawings do not indicate to

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

construct one; this should be confirmed. The original 1931 construction drawings call for 24-inch shingles with a 10-inch exposure. The existing roof and gutters are in good condition. The gutters require cleaning and may benefit from gutter covers.

Windows and Shutters

The original windows for HS-07 were very different than windows designed for the other historic quarters. These were originally steel out-swing casement windows. The original 1931 construction drawings clearly indicate the original steel multi-lite casement window design and historic photographs of the construction show the steel windows installed. The windows were manufactured by the Truscon Steel Company

The steel windows were replaced during a larger insulation and renovation project in 1952 with wood double-hung windows with horizontal glass lites, as seen in the 1950s photographs. These windows were later covered on the exterior with a metal storm window.

The interior window sash were again replaced with existing metal interior windows at an unknown date and the existing metal exterior storm windows were installed in 1980. These replacement interior windows are not historically appropriate, nor are they energy efficient. They are a cream-colored finish, which does not match the interior dark stained trim. These are primarily installed in the public spaces in the house (Living Room, Kitchen, Breakfast Nook and the Bathroom, Windows 101, 102, 103, 104, 105 and 106). The 1932 exterior wood trim window surrounds are in various state of deterioration. Metal storm windows of varying vintage are installed on these exterior openings (Figures W2 – W5). The metal storm windows are showing signs of deterioration and age, and are ready for replacement.

In 2004, the bedroom windows were replaced (Windows 100, 107, 108 and 109). The windows installed at that time did not meet the required current life safety fire egress dimension. Therefore, all bedrooms windows were replaced with a reproduction Pella aluminum clad wood casement window with a simulated meeting rail in a 1/1 configuration. The original wood trim and sills on the exterior were panned with pre-finished aluminum. This panning is wider in overall dimension than the original wood window trim, therefore changing the appearance of the windows (Figure W5). Also, the sills are panned, increasing the overall height of the sill (Figures W6). The panning details have open joints and are not historically appropriate for the building and leave open joints that are completely dependent upon the condition of the sealant. The panning is providing protection of the historic wood trim and sills. The wood interior of the windows was never finished (Figure W7).

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

Rustic board and batten shutters with a diamond silhouette design in the center were installed on this house when it was first constructed (Figure W1). These shutters were also indicated on the original construction documents. They were installed on the windows on the south, east and north elevations, but were not installed on the west (rear) elevation. The last photograph in the file indicates they were installed at least until 1952 and were removed sometime prior to 1959. These were an important character defining feature of the exterior that lent the 'rustic' style to the building.



Figure W1. HS-07. ca.1940. Note the steel casement windows and the rustic board and batten shutters with the diamond silhouette design in the center. (WCNP Archive Number: WICA 4730.)



Figure W2. Window 106 on the west elevation. (SRJA 2015)



Figure W3. Window 106 on the west elevation details. (SRJA 2015)



Figure W4. Window 101 interior detail of the metal interior sash against the stained pine trim. (SRJA 2015)



Figure W5. Window 109 on the north elevation. Aluminum replacement casement window with metal paning covering the historic trim. (SRJA 2014)



Figure W6. Window 107 on the west elevation detail. (SRJA 2015)



Figure W7. Window 108 replacement window that is not finished on the interior. (SRJA 2014)

Stone Masonry

The native stone foundation is laid in a random ashlar pattern. The foundations were specified to be buried in grade a minimum of 18-inches which is not to current frost depth design though true depth of the foundations has not been confirmed. The stone is in good condition throughout. The original mortar is intact in several locations, although the foundation has had several campaigns of mortar repointing. The more recent mortar is not a close match to the historic mortar. The existing original mortar is dirty and would need to be cleaned prior to assessing a new mortar match. Only a handful of stones are fractured and require replacement or monitoring.

Stucco and Paint

The exterior Spanish stucco is in relatively good condition on the east and north elevations, with only minor crack repairs on both elevations, which are typical of the age of the structure.

However, the stucco is in poor condition on the west and a small portion of the south elevation. The stucco is exhibiting excessive cracking and crazing on these elevations. The cause of this deterioration needs to be further investigated. It may be due to raised grade in contact with the stucco walls or in locations where concrete is in direct contact with the stucco wall with no soft joint installed.

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



Figure X1. East Elevation. Note at the north section, the grade is above the top of the stone foundation.
(SRJA 2014)

East Elevation

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

The exposed stone foundation on the east elevation is in good overall condition, requiring cleaning, spot repointing and mortar wash repair at the top of the foundation wall. A small crack near the northeast corner downspout requires repointing and monitoring. A small foundation vent to the lower left of Window 100 is original and is covered with insulation (Figure X20). Both

downspouts on the north end of this elevation are missing extensions and water is draining too close to the foundation. At the north projection, the grade is well above the top of the stone foundation walls and is in direct contact with the stucco (Figure X21). There is moisture in the stucco leading to cracking and paint loss. Besides where in contact with grade, the stucco wall cladding is in good overall condition. There are only very minor cracks that require repairs. Wood trim throughout this elevation requires only touch-up painting.

Window 100 is an original window location with an aluminum clad wood casement window installed. The exterior wood trim is covered with metal panning (Figure X1 – north side of the elevation). Historically, this window opening contained a pair of steel out-swing casements and was flanked with a pair of rustic board and batten shutters.

Front Porch

The front porch projects from the face of the house and is topped with a gable. The base of the porch and the front steps are stone and continue around the porch structure from the foundation of the house. The stone walls and steps are in fair condition and require cleaning and spot repointing (Figures X7 – X9). The south wall has several small separations in the mortar which indicate the wall is rotating outward towards the east. There is no handrail on the front steps to the porch.

The stone porch foundation walls require cleaning and spot repointing. There are several cracks that require attention and monitoring. A nearly matching pair of cracks at the northeast and southeast corners are visible. A crack in the north wall of the porch foundation also projects in vertical and horizontal cracking in the stucco above (Figures X3 and X4). These corner stones are shifting and also project a crack around corner on the east facing wall (Figures X5 and X6).

A large vertical crack on the south facing wall at the southeast corner of the porch travels from the foundation up through at least two vertical mortar joints, indicating some settlement in this area (Figures X2, X10 and X11). These corner cracks indicate the outer corners are rotating and may require further foundation investigation or potential underpinning in the future.

The stucco walls of the porch have a few cracks, as identified. These appear to be due to the porch foundation settlement. The wood porch floor was laid in the last few years and has buckled (Figure X14). The floor is a high quality white oak that was installed with splines. The floor was not sealed before it was laid and there was not enough room left for expansion of the flooring. Animals have been chewing on the ends of the exposed boards. The buckled flooring is a tripping hazard and requires replacement or repair.

The wood wall cap and six columns require repair and painting (Figures X12 and X13). The beaded board porch ceiling is in good condition. Hooks remain in the ceiling from a previous porch swing. The main Door 100/1 is in good overall condition and has the original hardware (Figures X15 – X17). The wood door has been well protected by the storm door and the porch covering. The wood door frame and threshold requires minor touch-up painting. The metal storm door is in good working condition, but the paint finish is oxidizing. A small patch of stucco requires repair at the bottom left of the door near the floor.

Windows 101 and 102 flank the front door (Figure X19). Both of these are original window openings. The interior window sash are metal replacement and the exterior openings have

metal storm windows installed. The original wood trim is intact and in good condition, since it has been protected by the porch.

A light fixture is hung from the wall adjacent to the door (Figure X18). Early photographs do not show the original fixture clearly, but it was originally a hanging type. The date of the existing fixture is unknown. The exposed wiring on the outside is not very attractive.

The wood trim and horizontal wood siding in the east-facing porch gable appear to be in good overall condition, requiring only touch-up painting (Figures X1 and X2). It was not apparent if the wood louvers in the gable contain screens. These should be verified to be in place and in good condition. The south cornice is missing large sections from previous animal activity, but appears to be stable.



Figure X2. East porch. The red arrows identify cracks. (SRJA 2014)



Figure X3. Porch - North Elevation. The red arrow identifies a crack. (SRJA 2014)



Figure X4. Porch – North Elevation foundation and stucco cracks. The top red arrow identifies a long traveling crack in the stucco. The bottom red arrow identifies a long vertical crack in the mortar joints that begins below grade and projects to the top of the foundation wall. (SRJA 2015)



Figure X5. Porch – East Elevation foundation crack detail. The red arrow indicates a vertical crack through the mortar joints from below grade to the top of the foundation wall. (SRJA 2015)



Figure X6. Porch – East Elevation stucco crack at northeast corner. The red arrow identifies a crack in the corner of the plaster that has traveled from the north side of the wall. (SRJA 2015)



Figure X7. Porch Steps – North Elevation. (SRJA 2015)



Figure X8. Porch Steps – East Elevation. (SRJA 2015)



Figure X9. Porch – East Elevation and south wall of steps. The red arrows indicate open mortar joints due to wall movement. The curved arrow indicates the wall is beginning to rotate forward. (SRJA 2014)



Figure X10. Porch - South Elevation. (SRJA 2014)



Figure X11. Porch - South Elevation crack detail. (SRJA 2014)



Figure X12. Porch – Center column detail with wood deterioration at bottom cap. (SRJA 2015)



Figure X13. Porch – northeast column detail of missing paint. (SRJA 2015)



Figure X14. Porch – flooring detail. (SRJA 2014)



Figure X15. Front Door 100/1. (SRJA 2014)



Figure X16. Front Door 100/1. (SRJA 2014)



Figure X17. Front Door 100/1 hardware detail. (SRJA 2015)



Figure X18. Porch light fixture. (SRJA 2015)



Figure X19. Window 101 details. (SRJA 2015)



Figure X20. East elevation foundation vent detail. (SRJA 2015)



Figure X21. Northeast corner of the building. The grade is well above the top of the stone wall and the stucco is cracked and has peeling paint. The downspout extension is missing. (SRJA 2015)



Figure X22. South Elevation. (SRJA 2014)

South Elevation

The South Elevation stone foundation is exposed at the east side of the elevation and grade rises towards the back (west side) of the house (Figure X22). The first floor is stucco and the roof is hipped. The stone chimney projects from the roof.

The exposed stone foundation on the south elevation is in good overall condition, requiring cleaning, spot repointing and mortar wash repair at the top of the foundation. A volunteer pine tree has taken root near the east downspout. This tree is growing too close to the stone foundation.

The bulkhead door was constructed ca. 1937 for access into the newly excavated basement (Figures X24 and X25). This bulkhead has stone foundation walls and poured concrete steps. The door and frame are wood and are in deteriorated condition, requiring some restoration and painting. The grade surrounding the stone bulkhead foundation is low at the southeast corner, exposing the top concrete wash.

The stucco wall cladding is in good overall condition. Cracking is prevalent near the west side of the wall where an original screen porch was infilled with frame walls and the stucco was blended with the rest of the wall (Figure X23). The outline of the original opening projects through the wall. The cracks here are not of structural concern. There is a significant vertical crack at the corner. To the east of the old screen porch, a sanitary clean-out projects through the wall. The use for this is unknown and needs to be investigated.

Windows 103 and 104 are original window openings. The interior window sash are metal replacement and the exterior openings have metal storm windows installed. The original wood trim is intact and in fair condition, requiring some rehabilitation and touch-up painting. Historically, the windows were steel out-swing casements and were flanked with pairs of rustic board and batten shutters.

A hose bibb is installed in the stucco wall just left of the bulkhead door. The hole has been sealed with spray foam.

The wood trim along this elevation appears to be in good overall condition, requiring only touch-up painting.

The stone chimney is most apparent from this side of the house (Figure X26 and R1). This chimney has been skirted with metal strapping from a previous antennae installation. The southwest stone at the top of the chimney appears to be missing. The cap is not visible from grade. Park staff have stated that this chimney serves as the discharge vent for the radon mitigation system in the basement. This chimney will require a closer inspection to review the termination at the top to determine it is adequately sealed to prevent bird and water infiltration.



Figure X23. South Elevation at west side. Outline of infilled screen porch can be seen. The right red arrow points to a clean-out installed in the wall. The left arrow points to a large vertical crack at the corner.
(SRJA 2015)



Figure X24. South Elevation bulkhead door. (SRJA 2014)



Figure X25. Basement bulkhead details. (SRJA 2015)



Figure X26. Chimney detail. (SRJA 2015)



Figure X27. West Elevation. (SRJA 2014)

West Elevation

The West Elevation of the house faces the upper road to the west (Figure X27). The road is several feet above the finish floor of the house. The house and road are separated by a steep grade and in-grade concrete steps (Figures X28 and X29). The concrete steps appear to be in good condition.

The west wall of the house is clad in stucco. A concrete slab spans the area between the steps and the house. The concrete landing lies directly against the stucco on the side of the house with no soft joint separating the materials (Figure X30). The landing is well above the top of the stone foundation wall in this location. The stucco wall adjacent to the concrete slab is severely deteriorated, exhibiting stucco loss, cracking and peeling paint. The original construction drawings for this side of the house show a minimum of 6-inches from the top of the stone foundation wall to the landing. Grade along this entire elevation has risen over time to well above the top of the foundation wall and there is no swale to carry water around the house. Therefore, the water drains down the hill and against this stucco wall. The foundation vent under Window 106 is almost completely covered by grade (Figure X31). Vertical cracks to the left and right of the front door align with the infilled screen porch area. The remainder of the west stucco wall has a significant amount of crazing and vertical cracks. This may be due to moisture in the stucco.

The wood trim on the west elevation appears to be in good overall condition, requiring only touch-up painting.

Window 105 (above the sink) is an original window opening, but the surrounding trim has been altered (Figures X33 and X34). The window opening has interior sliding metal sashes and an exterior metal storm window. Part of the exterior storm window is missing. Window 106 (bathroom) appears in early photographs and in the original construction drawings to be a pair of out-swing multi-lite steel casement windows. This opening must have been reduced in size to its current opening configuration when the steel windows were removed. The wood trim is in fair condition for both of these openings and requires only painting.

Window 107 (the northernmost window) is an aluminum clad wood casement window with exterior metal panning covering the historic wood. Originally, this was a pair of multi-lite steel out-swing casement windows. All three windows on this elevation had rustic board and batten shutters installed.

Door 103/1 was installed when the screen porch was infilled and transitioned to a utility room. The door is protected by a storm door. Both are in good condition. The wood door surround requires some touch-up painting.

The electrical meter and telephone box are installed on this elevation. A wall light fixture extends from the house at the southwest corner that has a glass shade. The date of this fixture is unknown (Figure X35).



Figure X28. West Elevation steps and grade, looking northwest. (SRJA 2015)



Figure X29. West Elevation grade, looking south. (SRJA 2015)



Figure X30. West Elevation.
Showing concrete landing and stucco wall deterioration. (SRJA 2014)



Figure X31. West Elevation covered foundation vent detail.
The gray box above is a GFCI. (SRJA 2015)



Figure X32. West Elevation Window 105. (SRJA 2015)



Figure X33. West Elevation Window 105 detail. (SRJA 2015)



Figure X34. West Elevation Door 103/1. (SRJA 2015)



Figure X35. West Elevation exterior light fixture at southwest corner. (SRJA 2014)



Figure X36. North Elevation. Note the grade is very high at the west side. The downspout extension is missing. (SRJA 2014)

North Elevation

The North Elevation is a single story with projecting rooms and hipped roofs (Figure X36). The stone foundation of the house is exposed at the east side of the elevation and grade rises towards the back (west side) of the house. About mid-way across the elevation, the grade rises above the top of the stone foundation. The grade is in direct contact with the stucco walls and has led to some minor stucco cracking in this area, especially in the northeast corner of the elevation (Figure X37). The west downspout is missing its extension.

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

The wood trim and horizontal wood siding in the north-facing gable appears to be in good overall condition, requiring only touch-up painting. It was not apparent if the wood louver in the gable contains a screen. This should be verified to be in place and in good condition. One of the wood louvers is loose and requires repair (Figure X38). The cause is not evident from grade.

Both Windows 108 and 109 are aluminum clad wood casement windows with exterior metal panning covering the historic wood trim. Originally, both of these windows contained pairs of multi-lite steel out-swing casement windows. Both windows originally had rustic board and batten shutters installed.



Figure X37. North Elevation – Window 109. (SRJA 2014)



Figure X38. North Elevation – wood louver detail. (SRJA 2014)

Existing Conditions – Interior

Basement

The footprint the foundation is 1,010 square feet, while the excavated portion of the basement is only 339 square feet. This excavated area is one large Room 001 (Figures B-1 – B18). Access to the basement is through an exterior bulkhead door along the south elevation. The house was originally constructed with only crawl space. The basement was excavated and the bulkhead access constructed ca. 1937. A photograph of the construction of the new opening can be seen in Figure 12. A wood door at the bottom of the stairs appears to be original to the construction of the bulkhead (Figure W1).

The basement is currently used for the hot water heater, laundry and storage. The main excavated area is approximately 15'-6" by 17'-0." The floor is a concrete slab. Clearance under the floor joists from the floor is 6'-8 1/2," while the clearance under the beams is only 6'-2." The excavation in the basement is similar to the other houses. The exterior stone foundation walls were only constructed to have a minimum of 18-inches below grade. Therefore, the basement excavations were set in several feet from the perimeter walls and new interior stone retaining walls were laid. A concrete cap was poured on top of these retaining walls to cover the soil. The NPS installed steel straps at the stone retaining wall, seen in Figures B-3 and B-5. A small crawl space remains under the north bedroom and a second crawl space under the southwest portion of the house.

A central wood post sets in the center of the basement and supports built-up wood beams in the east-west and north directions. These beams are pocketed into the stone masonry walls and also have supplemental support with blocking and steel posts. A brick chimney is located in the southwest crawl space. Another east-west wood beam is in line with the chimney and is supported mid-span by a small stone pier and is also pocketed into the stone foundation on the west wall and in the concrete porch foundation on the east wall.

There is some evidence of water infiltration along the west stone foundation wall (Figure B-11). This is likely due to the exterior grade being too high (above the top of the stone foundation walls) along this side of the house.

The water service and electrical panels are located along the west wall. Two electric wall heaters are installed – one on the north wall and one on the south wall. Piping and electrical wiring serving the first floor are exposed across the ceiling. The room is lit with three single sockets with exposed bulbs mounted to the floor joists space throughout the ceiling. A floor drain is located northwest of the center post. Much of the first floor joist insulation has been removed and not replaced. There is no insulation under the north bedroom. There is no perimeter insulation at the foundation walls. There is no vapor barrier covering the exposed soil in the crawl spaces. The dryer does not appear to vent to the exterior of the building.

Abandoned metal ductwork is found throughout the basement from an earlier forced air heating system (Figure B-16). A section of ductwork in the northeast corner of the basement has a fibrous material applied directly over the exterior of the ductwork. This should be tested as part of a comprehensive inspection for asbestos containing material.

A radon mitigation fan is installed to exhaust into the chimney. It is not known if the piping is solid PVC up through the top of the chimney, as required. This should be inspected by a qualified radon contractor, as current regulations require the vent to be placed on the exterior of the house.



Figure B-1. Basement Door 001/1 from the bulkhead. (SRJA 2014)



Figure B-2. Basement Room 001 Looking south. (SRJA 2014)



Figure B-3. Basement Room 001 Looking southwest – chimney foundation is near the corner. (SRJA 2014)



Figure B-4. Basement Room 001 Looking west at chimney. (SRJA 2015)



Figure B-5. Basement Room 001 Looking south at chimney. (SRJA 2015)



Figure B-6. Basement Room 001 Looking southeast at chimney. (SRJA 2015)



Figure B-7. Basement Room 001 Looking south into the crawl space. (SRJA 2015)



Figure B-8. Basement Room 001 Looking northeast at center post. (SRJA 2014)



Figure B-9. Basement Room 001 Looking west at center post framing. (SRJA 2015)



Figure B-10. Basement Room 001 Looking south. (SRJA 2014)



Figure B-11. Basement Room 001 Looking at west wall. (SRJA 2014)



Figure B-12. Basement Room 001 Looking at west and north walls. (SRJA 2015)



Figure B-13. Basement Room 001 Looking north towards north crawl space. (SRJA 2015)



Figure B-14. Basement Room 001 Looking into north crawl space.
Note the insulation is missing here. (SRJA 2014)



Figure B-15. Basement Room 001 Looking at north side of beam. (SRJA 2015)



Figure B-16. Basement Room 001 Looking northeast at a sample of abandoned ductwork. (SRJA 2015)



Figure B-17. Basement Room 001 Looking northeast. (SRJA 2014)



Figure B-18. Basement Room 001 Looking east at stone retaining walls and concrete porch foundation wall above. (SRJA 2014)

First Floor

The first floor is approximately 887 gross square feet and has eight total rooms, plus closets. The first floor is in nearly original 1932 condition with no major alterations except for the infill of the screen porch in the southwest corner of the house in 1958. Remodeling of the house has focused on finishes and specific renovations of the bathroom and kitchen. Plaster cracking throughout the interior of the house may pre-date the reinforcing of the first floor framing in the basement with the installation of the steel posts. After cracks are repaired, they should be monitored for further movement to ensure the stabilization is addressing the issues.

A major renovation of the house occurred in 1996. Lead based paint abatement occurred throughout the house. Trim was carefully documented, removed off site and reinstalled. The full scope of work is not clear at this time.

Millwork

The interior millwork is consistent throughout the house with simple profiles (Figure F-1 – F-3). The door and window trim have the same profiles. The top corners of the door trim are mitered

and the base of the door trim does not have plinths, like some of the other houses. The baseboards are flat stock with no profile and eased edges. All millwork appears to be dark stained pine. Only the Bathroom, Kitchen, Breakfast Nook, Mud Room and Closets have painted trim. A dark stained picture molding lines the top perimeter of some of the rooms.



Figure F-1. Typical millwork profiles – Mitered corners. (SRJA 2015)

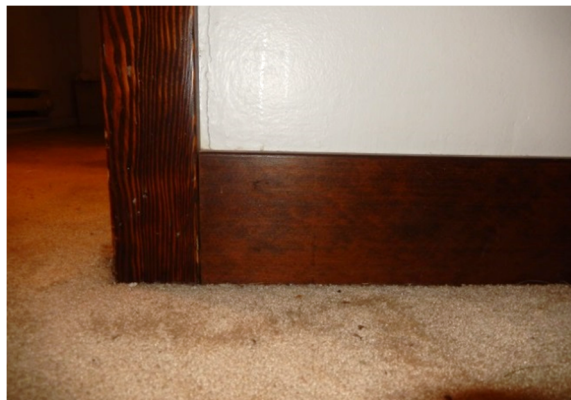


Figure F-2. Typical millwork profiles – Flat stock base and door trim with eased edges. (SRJA 2015)



Figure F-3. Typical millwork profiles – Flat stock window stool and apron with eased edges. (SRJA 2015)

Living Room 100

The Living Room 100 serves as the front entry and main living space for the house (Figures 1-1 – 1-7). The room is 10'-2" by 16'-3" with a ceiling height of 7'-10." The walls and ceiling are painted plaster. Cracks are prevalent throughout the plaster ceiling and west wall in this room. The cracking in the west wall may be due to previous settlement. Newer steel posts have been installed throughout the basement to support the first floor structure that may have corrected this situation. These cracks should be repaired and monitored for further movement.

Millwork installed on the doors and windows matches other millwork throughout the house. A stained picture molding approximately 6-inches below the ceiling and a stained baseboard line the perimeter of the room. In the northwest corner of the room, the door trim is cut at an angle and the baseboard patch does not match the original baseboard (Figure 1-7). The cause for this repair is unknown. The floors are a carpeted over an unknown wood substrate. The original floors in the Living Room were specified originally to be oak plank.

The front Door 100/1 is the original V-joint tongue and groove door and has the original hardware.

Windows 101, 102 and 103 were all originally pairs of steel out-swing casement windows. The steel sash were removed at an unknown time and replaced with metal replacement sash that are not historically appropriate or energy efficient. They have a white metal finish that does not match the historic stained trim (Figure W4). Exterior metal storm windows are also installed.

Baseboard heaters are installed along the east wall under the windows. Two historic wall sconces remain installed on the west wall (Figure 1-6). The room is lit by a ceiling fan in the center of the room.

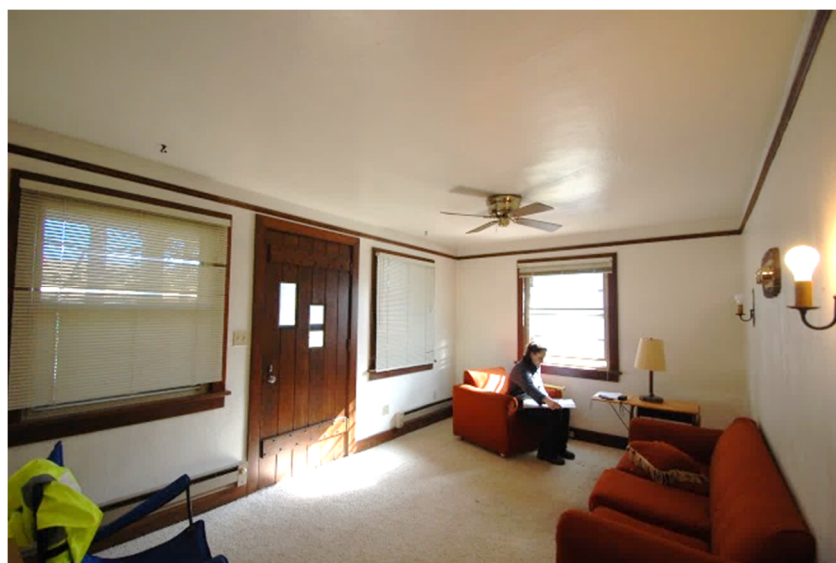


Figure 1-1. Living Room 100 Looking southeast. (SRJA 2014)



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



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



Figure 1-4. Living Room 100 Looking south. (SRJA 2014)



Figure 1-5. Living Room 100 Looking west. (SRJA 2014)



Figure 1-6. Living Room 100 Historic wall sconce. (SRJA 2014)



Figure 1-7. Living Room 100 Detail of millwork anomaly in the northwest corner of the room. Perhaps there was once a furnace damper in this location. (SRJA 2014)

Kitchen 101

Kitchen 101 is located on the west side of the first floor (Figures 1-8 – 1-11). The room is approximately 14'-6" by 9'-11" with the plastered brick chimney in the southeast corner of the space. The ceiling height is 7'-9." The Kitchen is accessible from the back Mud Rom and the front Living Room. The Breakfast Nook is open to the kitchen on the south and the Hall to the bedrooms is open to the Kitchen on the north side of the space. The walls and ceiling are plastered and in good overall condition with only some minor cracking. One crack above the Door 101/1 may be due to settlement.

The original cooking kitchen stove was exhausted into the north side of the chimney. The thimble is covered with a painted cover. The Kitchen was remodeled in 1980 with new cabinets and counters. All millwork matches other profiles in the house and is painted in this space. The flooring is wood laminate and in good condition. The original plans call for the Kitchen to have a linoleum floor.

Window 105 on the west wall was an original pair of steel out-swing casement windows. The steel windows were removed and replaced with metal replacement sash that are not historically appropriate or energy efficient. The window installed over the sink is installed sideways as a bypass window and is not in keeping with the intention of the historic window. The trim surrounding the window is not original. The existing Cased Opening 103/2 had a swinging door that has been removed. The original built-in ironing board in the south wall has been converted to open shelving.

A small baseboard heater is installed under the shelving on the west wall. Lighting is provided by a flush mount fixture over the sink and a ceiling fan in the center of the room.



Figure 1-8. Kitchen 101 Looking north. (SRJA 2014)



Figure 1-9. Kitchen 101 Looking east. (SRJA 2014)



Figure 1-10. Kitchen 101 Looking south. (SRJA 2014)



Figure 1-11. Kitchen 101 Looking west. (SRJA 2014)

Breakfast Nook 102

The Breakfast Nook 102 is open to the Kitchen through a cased opening on the wall (Figures 1-12 – 1-14). The room is approximately 8'-2" by 6'-0" with a ceiling height of 7'-10." The walls and ceiling are plastered and in good overall condition with only some minor cracking. The millwork in this room is similar to other rooms in the house and is painted. Window 104 in the south wall is an original window opening which contained a pair of steel out-swing casement windows. The steel windows were removed and replaced with metal replacement sash that are not historically appropriate or energy efficient. An exterior metal storm window is also installed. The laminate wood flooring is consistent with the kitchen. The room is lit by a flush mount fixture in the center of the room. A baseboard heater is installed on the south wall under the window. A painted board nailed to the west wall along with a high wall outlet indicates there was previously some type of shelf installed. A rod for a curtain is installed across the cased opening. The original flooring for this space was specified to be oak plank.



Figure 1-12. Breakfast Nook 102 Looking south. (SRJA 2014)



Figure 1-13. Breakfast Nook 102 Looking east. (SRJA 2014)



Figure 1-14. Breakfast Nook 102 Looking north. (SRJA 2014)

Mud Room 103

The Mud Room 103 serves as the back entry and is open to the Kitchen through Cased Opening 103/2 (Figures 1-15 – 1-18). The room is 5'-6" by 6'-0" with a ceiling height of 7'-10." A large floor to ceiling built-in painted wood shelving unit is installed in the southeast corner of the

room along the south wall. The walls are painted plaster and the ceiling is painted bead board. The baseboard and door trim are simple flat stock and are painted. The flooring is wood laminate and is consistent with the flooring in the adjacent kitchen. The original flooring in this space was specified to be oak plank.

This space was originally designed and constructed as a screen porch. This was renovated and infilled to become interior space in 1958. The condition of the exterior south wall is not apparent due to the shelving. Along the base of the west wall, plaster deterioration is visible above the baseboard. This is consistent with the plaster deterioration occurring on the exterior wall.

The back Door 103/1 dates to the 1958 renovation. The door is in good condition and is protected on the exterior with a storm door.

A baseboard heater is installed on the east wall. An old Econotrol panel is installed on the north wall. The room is lit by a flush mount fixture in the center of the room. A fire extinguisher is mounted to the east wall.



Figure 1-15. Mud Room 103 Looking north. (SRJA 2014)



Figure 1-16. Mud Room 103 Looking east. (SRJA 2014)



Figure 1-17. Mud Room 103 Looking south. (SRJA 2014)



Figure 1-18. Mud Room 103 Looking west. (SRJA 2014)

Bathroom 104

Bathroom 104 is the only bathroom in the house (Figures 1-19 – 1-22). The room is 8'-0" by 6'-0" with a ceiling height of 7'-8 1/2." The walls and ceiling are painted plaster or gypsum wall board. Millwork installed on the doors and windows matches other millwork throughout the house and is painted white. The flooring is sheet vinyl. This room was originally specified to have a linoleum floor.

The bathroom has been extensively remodeled, but the configuration of the plumbing fixtures has not changed since original construction. Window 106 in the west wall was originally a wider window with a pair of out-swinging steel casement windows. An earlier renovation likely installed a shower/tub and required that this window opening become narrower. The existing opening has been this size since sometime in the 1950s. The window sashes are metal replacement sashes with an exterior storm window installed. Door 104/1 is the original single recessed panel stained pine door and has the original hardware. The hardware is rusting from being installed in this damp environment.

A baseboard heater is installed on the south wall. Lighting is provided by a wall light fixture installed above the vanity and a flush mount ceiling fixture. An exhaust fan is installed in the center of the ceiling. The shower surround is grouted tile with a newer fiberglass liner installed

to cover the tile. All fixtures and finishes date to a renovation within the last 25 years and are in working condition.



Figure 1-19. Bathroom 104 Looking northeast. (SRJA 2014)



Figure 1-20. Bathroom 104 Looking east. (SRJA 2014)



Figure 1-21. Bathroom 104 Looking northeast. (SRJA 2014)



Figure 1-22. Bathroom 104 Hardware detail. (SRJA 2014)

Hall 105

Hall 105 leads from the Kitchen to the Bathroom and two Bedrooms (Figures 1-22 – 1-26). The space is only 3'-5" by 8'-3." The walls and ceiling are painted plaster. There are small cracks in the plaster that are typical for the age of the house. A small painted scuttle in the ceiling for access to the attic is original, although the panel appears to be newer.

A small built-in linen closet is located in the northwest corner. The closet has two stained single panel cabinet doors with original chrome plated brass latches. The stained pine millwork installed on the doors and windows matches other millwork throughout the house. The floors are a carpeted over an unknown wood substrate. The original floors in the hall were specified to be oak plank.

The room is lit by a flush mount fixture in the center of the room. A smoke detector is mounted on the ceiling.



Figure 1-23. Hall 105 Looking north. (SRJA 2014)



Figure 1-24. Hall 105 Looking west. (SRJA 2014)



Figure 1-25. Hall 105 Linen closet detail. (SRJA 2014)



Figure 1-26. Hall 105 Looking south. (SRJA 2014)

Bedroom 106

Bedroom 106 is the east bedroom (Figures 1-27 – 1-31). The room is 10'-1" by 14'-7" with a ceiling height of 7'-10." The walls and ceiling are painted plaster. Several small cracks are found on the walls and ceiling, but they are minor and are typical for the age of the house. Millwork installed on the doors and windows matches other millwork throughout the house. A stained picture molding approximately 6-inches below the ceiling and a stained baseboard line the perimeter of the room. A closet is located in the southeast corner of the room. The floors are carpeted. A small section of the carpet was pulled back and revealed floor tile. This tile should be tested for asbestos prior to renovation. The original floors in the bedroom were specified to be oak plank.

The closet has a built in shelving and a hanging rod. A single light socket on the ceiling provides light with an exposed lamp.

Both Doors 106/1 and 106/2 are original recessed single panel stained pine doors with original hardware (Figure 1-31). Windows 100 and 109 were originally pairs of steel out-swing casement windows. The steel sash were removed at an unknown time and replaced with metal replacement sash. Those windows were also removed and new aluminum clad wood casement egress windows were installed. The interior wood of the windows was never finished.

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



Figure 1-27. Bedroom 106 Looking north. (SRJA 2014)



Figure 1-28. Bedroom 106 Looking east. (SRJA 2014)



Figure 1-29. Bedroom 106 Looking south. (SRJA 2014)



Figure 1-30. Bedroom 106 Looking west. (SRJA 2014)



Figure 1-31. Bedroom 106 Door hardware by Yale Junior (SRJA 2014)

Bedroom 107

Bedroom 107 is the west bedroom (Figures 1-32 – 1-35). The room is 11'-10" by 11'-5" with a ceiling height of 7'-10." The walls and ceiling are painted plaster. Several small cracks are found on the walls, but they are minor and are typical of the age of the house. There are several cracks along the west wall which may be due to the moisture in this wall due to the raised grade along this elevation. A large crack travels north-south on the ceiling.

Millwork installed on the doors and windows matches other millwork throughout the house. A stained picture molding approximately 6-inches below the ceiling and a stained baseboard line the perimeter of the room. A closet is located in the southwest corner of the room. The floors are a carpeted over an unknown substrate. The original floors in the bedroom were specified to be oak plank.

The closet has a built in shelving and a hanging rod. A single light socket on the ceiling provides light with an exposed bulb. An old fuse panel is located on the south wall of the closet.

Both Doors 107/1 and 107/2 are original recessed single panel stained pine doors with original hardware. Windows 107 and 108 were originally pairs of steel out-swing casement windows. The steel sash were removed at an unknown time and replaced with metal replacement sash. Those windows were also removed and new aluminum clad wood casement egress windows were installed. The interior wood of the windows was never finished.

A baseboard heater is installed along the west wall under the window. The room is lit by a flush mount fixture in the center of the room that is missing its cover. A smoke detector is installed on the ceiling near the door.



Figure 1-32. Bedroom 107 Looking north. (SRJA 2014)



Figure 1-33. Bedroom 107 Looking east. (SRJA 2014)



Figure 1-34. Bedroom 107 Looking south. (SRJA 2014)



Figure 1-35. Bedroom 107 Looking west. (SRJA 2014)

Existing Conditions – Structural

HS-07 is a single story wood framed structure with shallow foundations. The building was originally constructed with a crawl space. Part of the area below the building was excavated and converted into a basement area for increased head room and has a concrete slab-on-grade. In the southwest corner and northwest corner of the portions of the building, the original crawl spaces remain.

Original construction drawings dated August 31, 1931 titled “Employee’s Residence” show the original timber floor girders supported by small footings in the crawl space.

The current usage of the building is consistent with its original design intent.

Basement 001

The basement area was originally a crawl space. The original crawl space in the basement area was excavated to a lower depth to provide head room for walking. The basement has a concrete slab-on-grade floor. New stone retaining walls were constructed in-ward approximately three feet from the face of existing shallow stone foundation walls on the north, east and west walls to provide for the deeper excavation (Figure S1). The thickness of the retaining walls could not be confirmed. The added stone walls extend up from the slab-on-grade and have a concrete cap covering the soil between the two walls. In the southwest and northwest corners, a portion of the original crawl space remains.



Figure S1. Stone retaining walls looking north. (SEA 2015)

The stone retaining walls do not exhibit cracking or displacement. At the corner of the stone retaining wall adjacent to the southwest crawl space, there is evidence that repairs have been made (Figure S2). The repairs that are visible consist of stainless steel bands tying the two

walls of the corner together. Post-installed anchors connect the straps to the retaining walls. A crack has been repointed as part of that repair. The repairs are consistent with the stone retaining wall moving outward at this corner.



Figure S2. Repair to existing stone retaining wall looking southwest. (SEA 2015)

The floor framing consists of three-ply 2x8 (nominal) wood girders supporting 2x10 wood joists at 16-inches on center. Two girders span east-west and one girder spans north-south. The girders are supported in different methods depending on location.

Originally the girders were supported on the interior by small interior footings or by a haunch on the chimney. On the exterior perimeter of the building the girders were supported by the perimeter building foundation. Currently the girders are supported by a combination of wood posts, haunches, and 2 ½-inch diameter steel posts.

On the west end of the southern-most girder, the interior end of the post is supported by the original haunch on the chimney with wood blocking between the chimney haunch and the girder, wood blocking from a stone support on top of the stone retaining wall and a 2 ½-inch diameter steel post (Figure S3). While they appear to be performing adequately at this time, none of these appear to be permanent repairs.



Figure S3. Room 001 girder support, east side of chimney looking south. (SEA 2015)

The steel post bears on top of the slab-on-grade. The slab-on-grade at this location does have a square area of new concrete immediately below the post, which may indicate that a footing is present, however no positive evidence of a footing is available. The post is not anchored to the slab-on-grade. At the top of the post there is no positive anchorage to the girder.

On the west side of the chimney in the crawl space area, there is a similar detail where the girder bears the chimney footing, but a short steel post has also been installed (Figure S4). The steel post bears on wood blocking that bears on a concrete block.



Figure S4. Girder support west side of chimney looking southeast. (SEA 2015)

Further to the west on the same girder, what appears to be one of the original footings is present. Wood blocking sits on top of the footing and provide support to the girder (Figure 5). The wood blocking does not appear to be treated lumber.



Figure S5. Girder support on original crawl space footing. (SEA 2015)

A steel post also supports the east end of the northern-most girder. This post also bears on the slab-on-grade which has a rectangle of new concrete (Figure S6). This may or may not indicate the presence of a footing under the post.



Figure S6. Girder support on steel post along east wall. Note the concrete many indicate there is a footing in this location. (SEA 2015)

At the center of the basement there is a wood post supporting wood girders from three directions. The north-south girder is supported at this location by a wood corbel (Figure S7). While this appears to be functioning adequately at this time, the eccentric loading could lead to corbel rotation, compromising the support of the north-south girder.



Figure S7. Corbel support of wood girder looking west. (SEA 2014)

At the north end of the north-south girder the girder is supported by the exterior perimeter foundation wall, wood blocking on the stone retaining wall and a 2 ½-inch diameter steel post (Figure S8). This steel post also has a square area of newer concrete in the slab-on-grade indicating the possibility of a footing (Figure S9).



Figure S8. Support of north girder at west end looking north. (SEA 2015)



Figure S9. Newer slab-on-grade below steel post detail. (SEA 2015)

At the west side of the basement adjacent to the west foundation wall, a floor joist has been cut/notched to installed drain lines (Figure S10). The cut/notch is located approximately 3'-1" north of the south girder under the kitchen sink cabinet.



Figure S10. Notch in girder for drain installation. (SEA 2015)

First Floor

The first floor is finished space. No structural framing members were visible to view.

Cracks are present in the wall at the corner of the jamb of Doors 100/2, 106/2 and 107/1.

Cracking is present in the ceiling of Rooms 100 and 106.

Attic

The ceiling framing consists of 2x6 (nominal) joists at 16-inches on center.

Roof framing consists of 2x6 (nominal) roof rafters at 16-inches on center and 2x6 hip rafters. 1x6 braces are present to brace the roof rafters. The 1x6 bracing members extend down to the ceiling joists (Figure S11). Over Rooms 100 and 106 this additional load to the ceiling joists is increasing the deflection in the joists and resulting in cracking in the ceiling.



Figure S11. Roof framing, 1x6 bracing bearing on ceiling joists. (SEA 2015)

Exterior

Cracks are present in the stone foundation wall. The cracks are located on the south elevation near the southeast corner, the south face near the northeast corner and the north face near the northeast corner. The cracks are consistent with settlement of this portion of the building (Figures S12, S13, and S14).



Figure S12. Crack in south foundation wall. (SRJA 2015)



Figure S13. Crack in east foundation wall. (SRJA 2015)



Figure S14. Crack in north foundation wall. (SRJA 2015)

Existing Conditions – Mechanical, Electrical and Plumbing



Figure MEP01. Residence – HS-7. (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, an electric hot water heating system, a domestic water system, and a drain, waste, and venting system.

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

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

A series of 4-inch and 6-inch sanitary sewer branches exit the historic structures and gravity drain into a private sewer main system owned by the National Park Service. This private sewer main appears to be routed under the main drive between the visitor's center and the housing area.

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

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

Heating and Cooling Systems

The original heating system, dated in the construction drawings from 1931, consisted of a wood-burning fireplace. No cooling system appears in the original 1931 construction set.

An electric baseboard heating system (Figure M01) was added throughout the building during a remodel that took place in the 1980s. The existing chimney is no longer in use and is abandoned in place.

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.

This building does not have a cooling system or a forced air system installed. Ceiling fans are installed in Living 100 and Kitchen 101 for general air circulation (Figure M02).



Figure M01. Example of electric baseboard heaters In Living 100. (HEI 2015)



Figure M02. Example of ceiling fan in Living 100. (HEI 2015)

An exhaust hood is located above the stove in the Kitchen 101 and is ducted to the exterior through the roof (Figure M03).



Figure M03. Kitchen 104, Exhaust hood and termination. (HEI 2015)

Bathroom 104 has an existing ceiling mounted exhaust fan. It is ducted up through the ceiling and discharges exhaust air into the attic space. Per International Mechanical Code section 501.3, air shall not be exhausted into an attic space. (Figure M04). Moisture can potentially build up in the attic creating deterioration and mold problems.

A wall mounted electric heater serves the Basement 001 (Figure M05).

A fan for radon mitigation exhausts air from Basement 001 through a PVC pipe that is routed through the existing chimney to outside (Figure M06).

Abandoned ductwork for an old forced air system is located around the perimeter of Basement 001 in several locations (Figure M07). No construction documents have been found for this work.



Figure M04. Bathroom – 104, Exhaust fan and termination. (HEI 2015)



Figure M05. Electric heater in Basement 002. (HEI 2015)



Figure M06. Radon system in Basement 005. (HEI 2015)



Figure M07. Example of abandoned ductwork 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). The irrigation system is controlled by manually operated shut off valves. The potable water system is routed below grade and enters the building in the south side of Basement 002.



Figure P01. Irrigation vacuum breaker. (HEI 2015)

The original plumbing system, shown in the construction drawings 1931, consisted of domestic water piping system and a drain, waste, and vent piping system. A water heater, of an unknown fuel source, may have been located within the basement. The interior plumbing systems original to the structure were removed and replaced with an all plastic piping system in a 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 P03), exposed water piping, and exposed drain, waste, and vent piping. The first floor plumbing systems serve the Kitchen 101, Bathroom 104, and exterior hose bibbs (Figure P02).



Figure P02. Wall hydrant. (HEI 2015)



Figure P03. Domestic electric water heater in Basement 001. (HEI 2015)

A ¾-inch copper domestic water line enters the building through the basement wall on the west side of Basement 001 (Figure P04). The domestic water goes to a domestic water meter, located on the west wall of this room.



Figure P04. 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 P06). 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 P06). The first floor plumbing fixtures and floor drains located in Basement 001 drain into a four-inch sanitary waste system that is routed below the basement floor and exits the building to the east (Figure P05). 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. The yard cleanout cover is damaged at the exterior of the building and needs replaced.

The Kitchen 104 has a two-compartment stainless steel sink (Figure P07).

Basement 001 has washing machine connections for hot water, cold water and drain (Figure P08).



Figure P05. Damage exterior sanitary sewer cleanout. (HEI 2015)



Figure P06. Example of water and sanitary piping system in Basement 001. (HEI 2015)



Figure P07. Stainless steel two-compartment sink in Kitchen 104. (HEI 2015)



Figure P08. Washing machine connections in Basement 001. (HEI 2015)

Bathroom 104 has a counter mounted lavatory, white vitreous china water closet, and a molded fiberglass tub (Figure P09 and Figure P10).



Figure P09. Lavatory and water closet in Bathroom 104. (HEI 2015)



Figure P10. Shower in Bathroom 104.
(HEI 2015-Left, SRJA 2015-Right)

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 P14).



Figure P11. Example of gutter and downspout systems. (HEI 2015)

Electrical and Lighting Systems

The electrical service to the property is supplied by the Black Hills Corporation and is fed from a centrally located, single-phase, pole mounted transformer located on the south side of Building HS-06. The 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 HS-07. 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 (Figures E02 and E03). From the meter the conduit goes underground and terminates in the electrical service panelboard.



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

The electrical service panelboard is located on the west wall of Basement 001 (Figure E04). It is a 225A, 42-pole, 240/120V single phase, 3-wire panelboard with a 225A main circuit breaker (Figure E05). This panelboard serves all of the power loads in the building including lighting, HVAC, kitchen equipment and general purpose receptacles. The panelboard is manufactured by Westinghouse and appears to be in good condition. It does not meet the minimum clearance required by NEC Table 110.26(A)(1). The existing PVC piping in front of the panelboard is located 35 $\frac{3}{4}$ -inches from the face of the panel, 36-inches is required. The date of installation could not be confirmed. There are currently no arc fault circuit interrupter (AFCI) circuit breakers in the panelboard which are required in residential construction by the NEC. Overall the existing electrical system appears to be in good working order.



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



Figure E05. Electrical panelboard 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 panelboard are exposed NM cable. General use grounded duplex receptacles are installed throughout the house. Ground Fault Circuit Interrupting (GFCI) receptacles are installed in the restroom and kitchen.

There is an Econotrol Peak Demand Controller next to the panelboard in Basement 001 that appears to be connected, but is not in use (per the park maintenance staff). There is an abandoned fuse box located in Closet 107A that is now being used as a junction box. The electric water heater and basement wall heaters 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 consists of incandescent fixtures that appear to be in good condition. The exterior door on the west side of the house has a glass jar pendant light that extends from the building via conduit and has an incandescent lamp. The exterior door on the east side of the house has an incandescent lantern fixture mounted to the right of the door. The exterior lighting is controlled individually by a toggle switch located on the interior side of each door.

Basement 001 has three porcelain socket fixtures lamped with incandescent lamps (Figure E06). They are controlled by a toggle switch located near the door to the basement at the bottom of the stairs.



Figure E06. Light fixtures located in Basement 001. (HEI 2015)

Living Room 100 has a four-blade ceiling fan (Figure E07). There are also two historic incandescent candle sconces mounted on each side of the west wall (Figure E08). The sconces and the ceiling fan are switched separately with toggle switches



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



Figure E08. Historic light fixtures located in Living Room 100. (HEI 2015)

Kitchen 101 has a four-blade ceiling fan with a four-lamp glass shade light kit and varying types of incandescent lamps (Figure E09) and a surface mounted light above the sink (Figure E10). The ceiling fan is controlled by three-way toggle switches (located near Living Room 100 and West Entry 103) and the sink light fixture is controlled by a toggle switch (located to the right of the sink).



Figure E09. Ceiling fan located in Kitchen 101. (HEI 2015)



Figure E10. Light fixture located above the sink in Kitchen 101. (HEI 2015)

Breakfast Nook 102 has a glass globe incandescent fixture mounted in the center of the room. (Figure E11). It is controlled by a toggle switch.

West Entry 103 and Hall 105 have a single glass globe incandescent fixture mounted in the center of the room (Figure E12). They are each controlled by a toggle switch.



Figure E11. Light fixture located in Breakfast Nook 102. (HEI 2015)



Figure E12. Light fixture located in West Entry 103 and Hall 105. (HEI 2015)

Bathroom 104 has a ceiling mounted glass globe similar to the fixtures in West Entry 103 and Hall 105 (Figure E12) and a decorative two-lamp glass shade bathroom sconce with incandescent lamps mounted above the mirror (Figure E13). The glass globe and decorative bathroom sconce are controlled by a toggle switch located by the bathroom door.



Figure E13. Decorative sconce located in Bathroom 104. (SRJA 2014)

Bedrooms 106 and 107 each have a single vintage square glass incandescent fixture with two screw base compact fluorescent lamps (Figure E14). The light fixture in Bedroom 107 is missing the square glass cover. They are each controlled by a toggle switch.

Bedroom Closets 106A and 107A each have a recessed incandescent porcelain socket fixture located on the center of the ceiling with exposed bulbs (Figure E15). Each closet fixture is controlled with a toggle switch located on the bedroom side of the closet door.

There is no lighting installed in the attic.

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



Figure E14. Light fixture located in Bedrooms 106 and 107. (HEI 2015)

The telephone service runs in conduit underground to the telephone demark point located on the west side of the exterior of the house (Figure E16). No data distribution system appears to be installed. A TV satellite antenna was installed on the west side of the house exterior (Figure E15). A coax cable extends from the antenna down and into the ground.



Figure E15. Telephone service located on the west exterior wall. TV satellite antenna located the west of the house. (SRJA 2015)

Fire Alarm Systems

The fire alarm system consists of hardwired smoke detectors with battery-backup. There is one located in Basement 001, in Bedrooms 106 and 107, and in Hall 105.

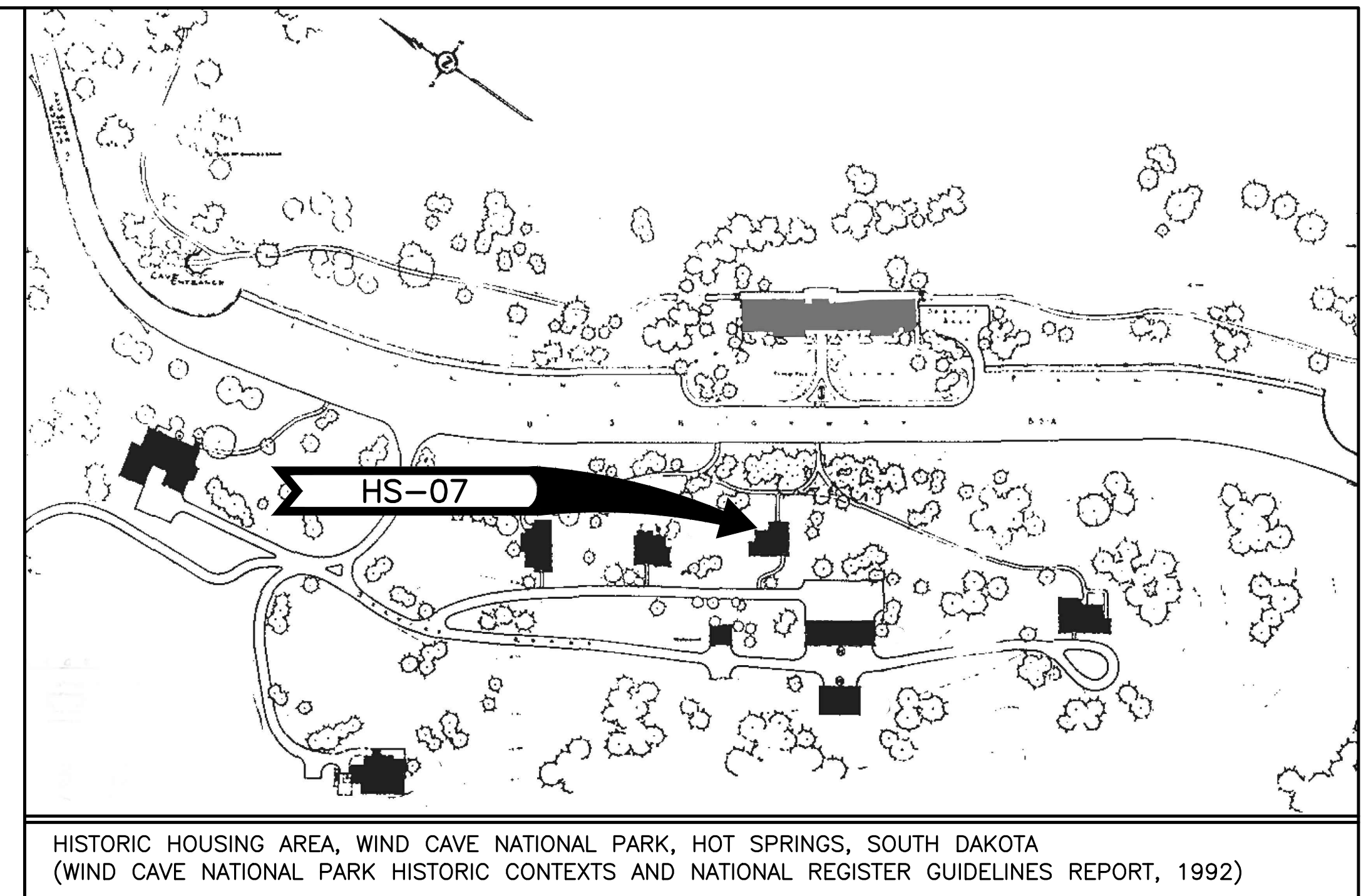
Fire Protection Systems

The house has two hand activated dry chemical fire extinguishers. The first is located in Basement 001 and the second is located in West Entry 103 (Figure F01).



Figure F01. Fire extinguishers. (Basement 001-Left, West Entry 103-Right)
(HEI 2015-Left, SRJA-Right)

HS-07 QUARTERS
HISTORIC STRUCTURES REPORT
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
EXISTING CONDITION DRAWINGS
HOT SPRINGS, SOUTH DAKOTA



HS-07 QUARTERS (SRJA 2014)

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A2 EAST ELEVATION AND SOUTH ELEVATION

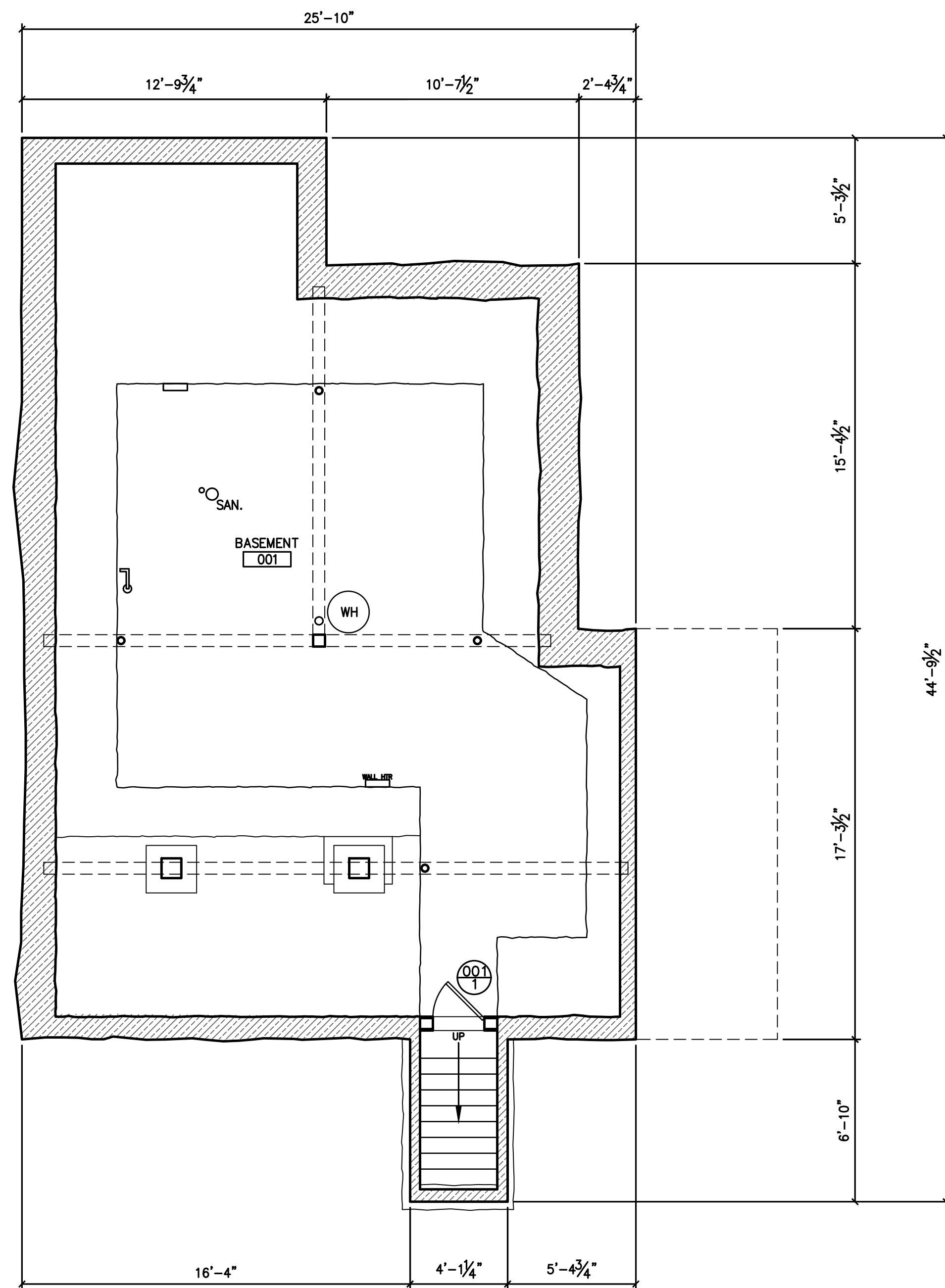
A3 WEST ELEVATION AND NORTH ELEVATION

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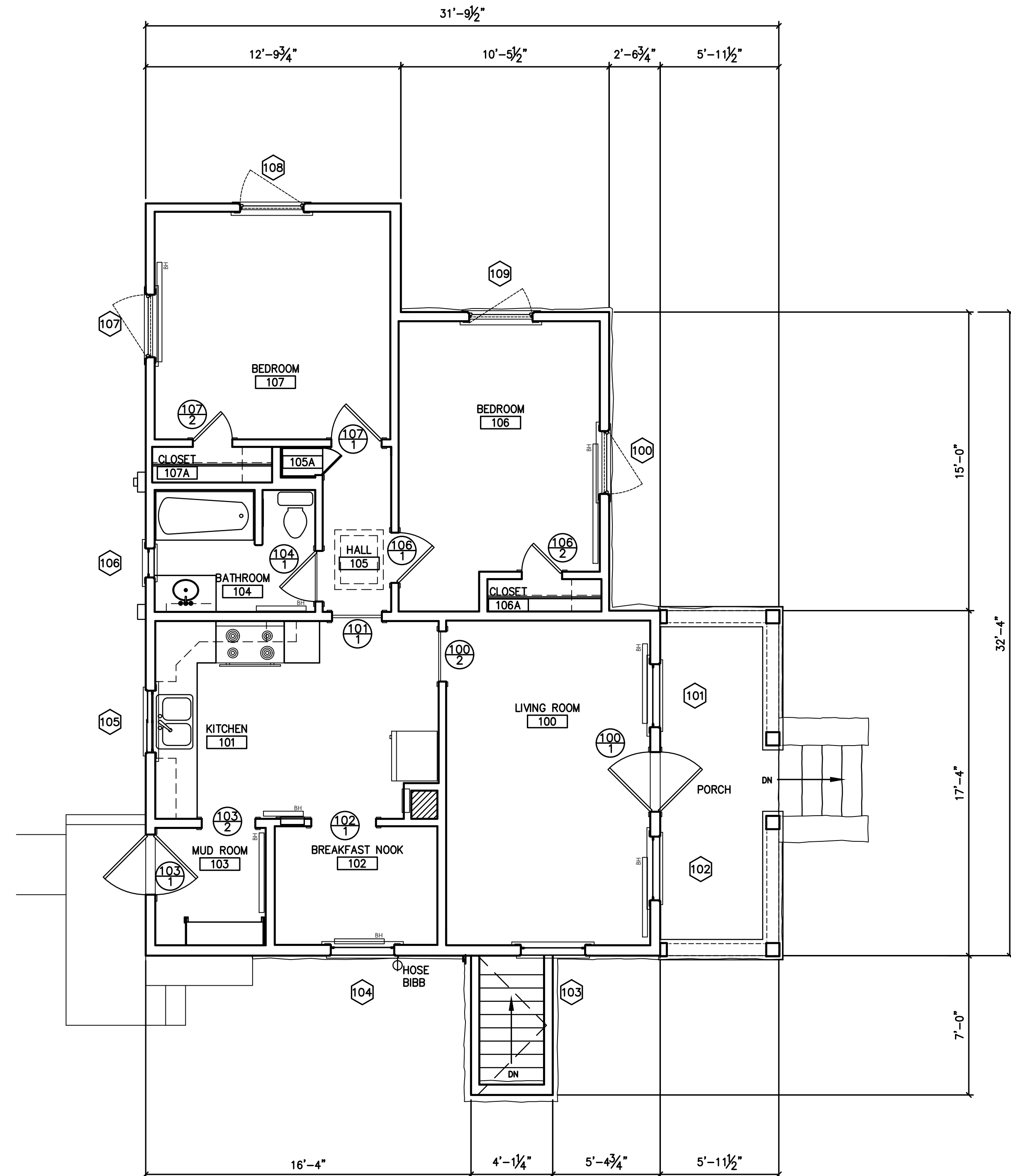
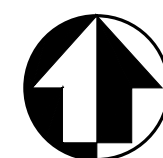
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MEASURED IN NOVEMBER 2014

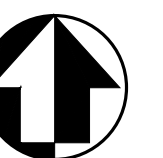
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			128873
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1 EXISTING HS-07 BASEMENT PLAN
AO 1/4" = 1'-0"



1 EXISTING HS-07 FIRST FLOOR PLAN
AO 1/4" = 1'-0"



DRAWING KEY:

 MASONRY FOUNDATION WALLS

4 0 4 8
SCALE OF FEET


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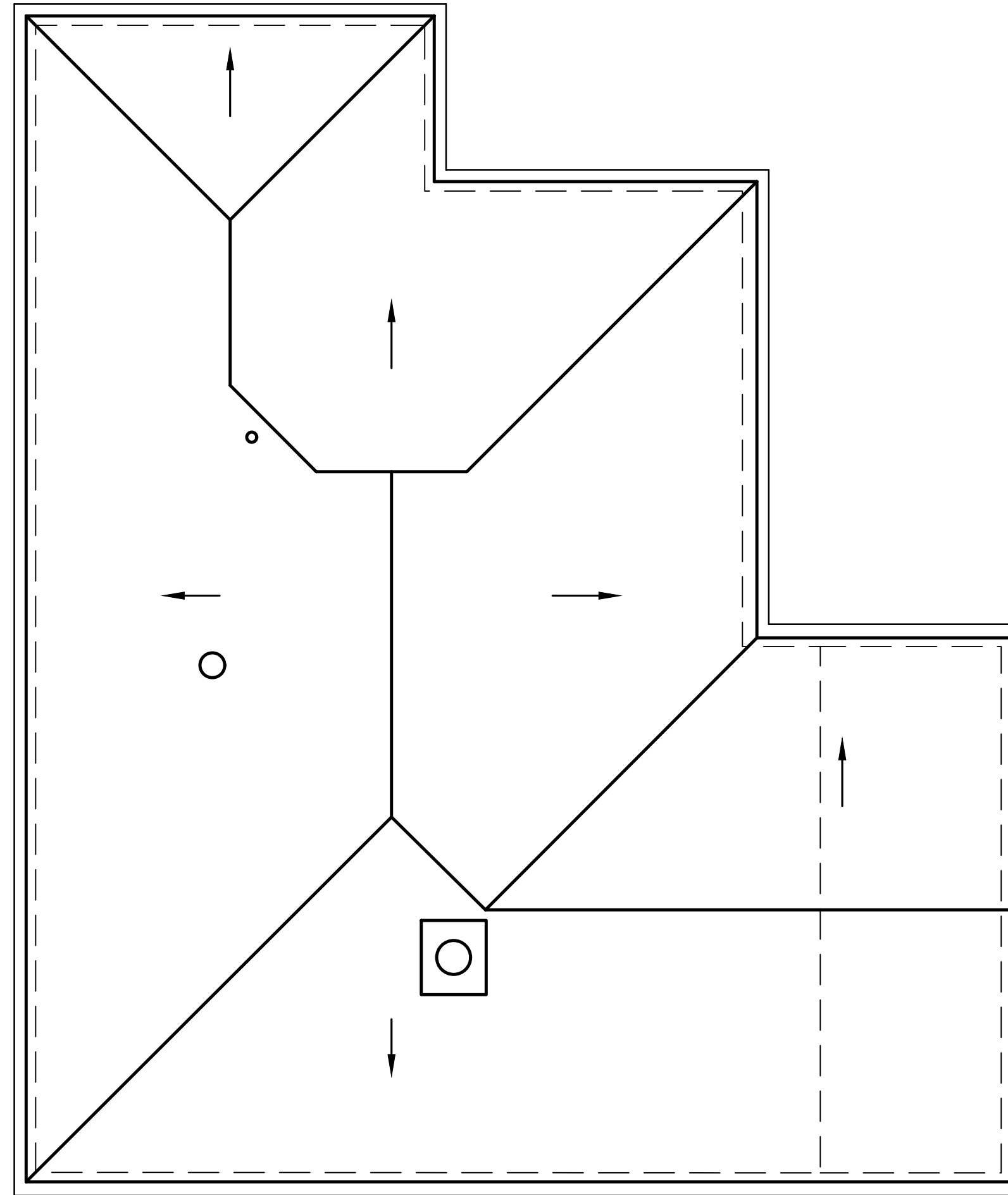
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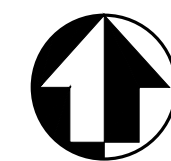
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TITLE OF SHEET
EXISTING CONDITION DRAWINGS
HS-07
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128873
PMIS/PKG NO.
158029
SHEET
2 of 6



1
A1
EXISTING HS-07 ROOF PLAN
1/4" = 1'-0"



 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. A1	TITLE OF SHEET EXISTING CONDITION DRAWINGS HS-07 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK HOT SPRINGS, SOUTH DAKOTA	DRAWING NO. 108 128873 PMIS/PKG NO. 158029 SHEET 3 OF 6
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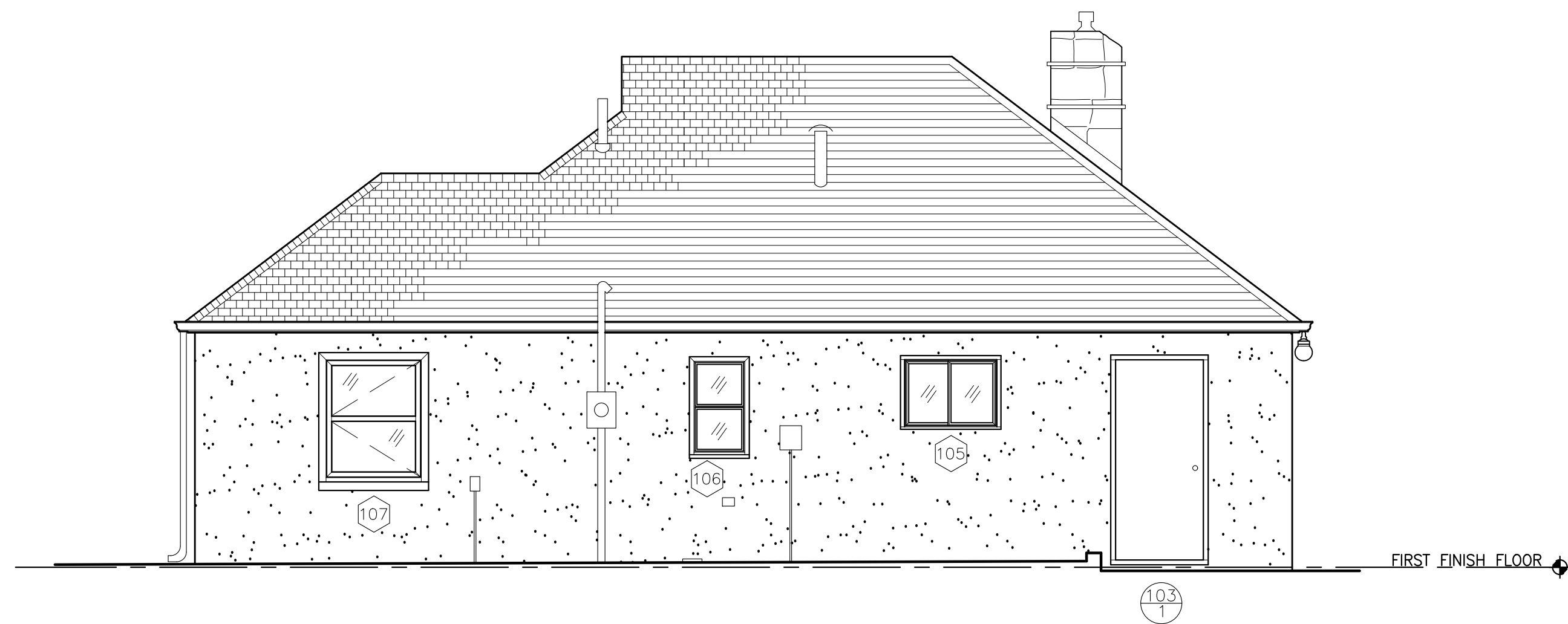
1 EXISTING HS-07 EAST ELEVATION
A2 1/4" = 1'-0"



2 EXISTING HS-07 SOUTH ELEVATION
A2 1/4" = 1'-0"



 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. A2	TITLE OF SHEET EXISTING CONDITION DRAWINGS HS-07 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK HOT SPRINGS, SOUTH DAKOTA	DRAWING NO. 108 128873 PMIS/PKG. NO. 158029 SHEET 4 OF 6
	DATE: 10/23/15			
	TECH. REVIEW: AM			
	DATE: 10/23/15			



1 EXISTING HS-07 WEST ELEVATION
A3 1/4" = 1'-0"



2 EXISTING HS-07 NORTH ELEVATION
A3 1/4" = 1'-0"



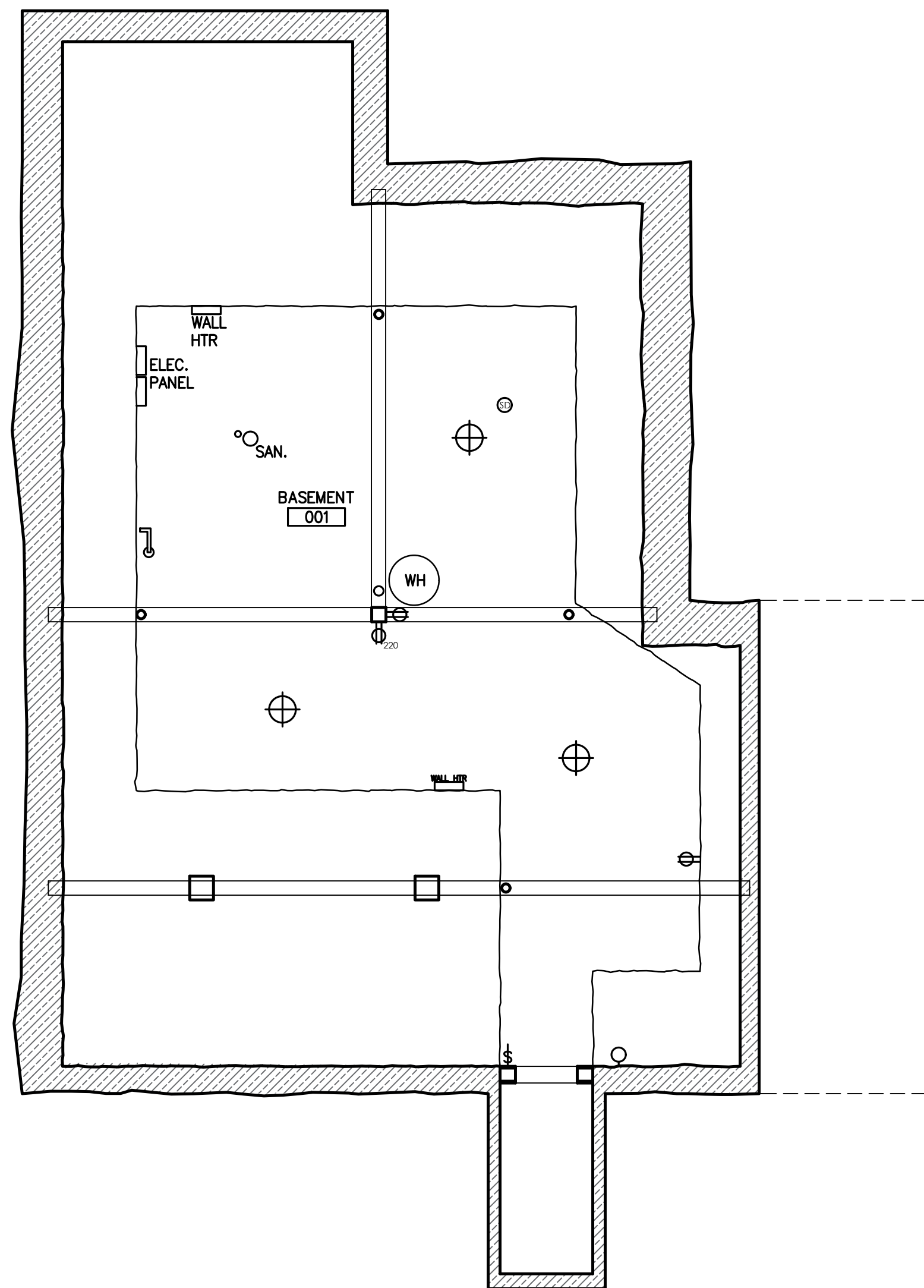
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10/23/15

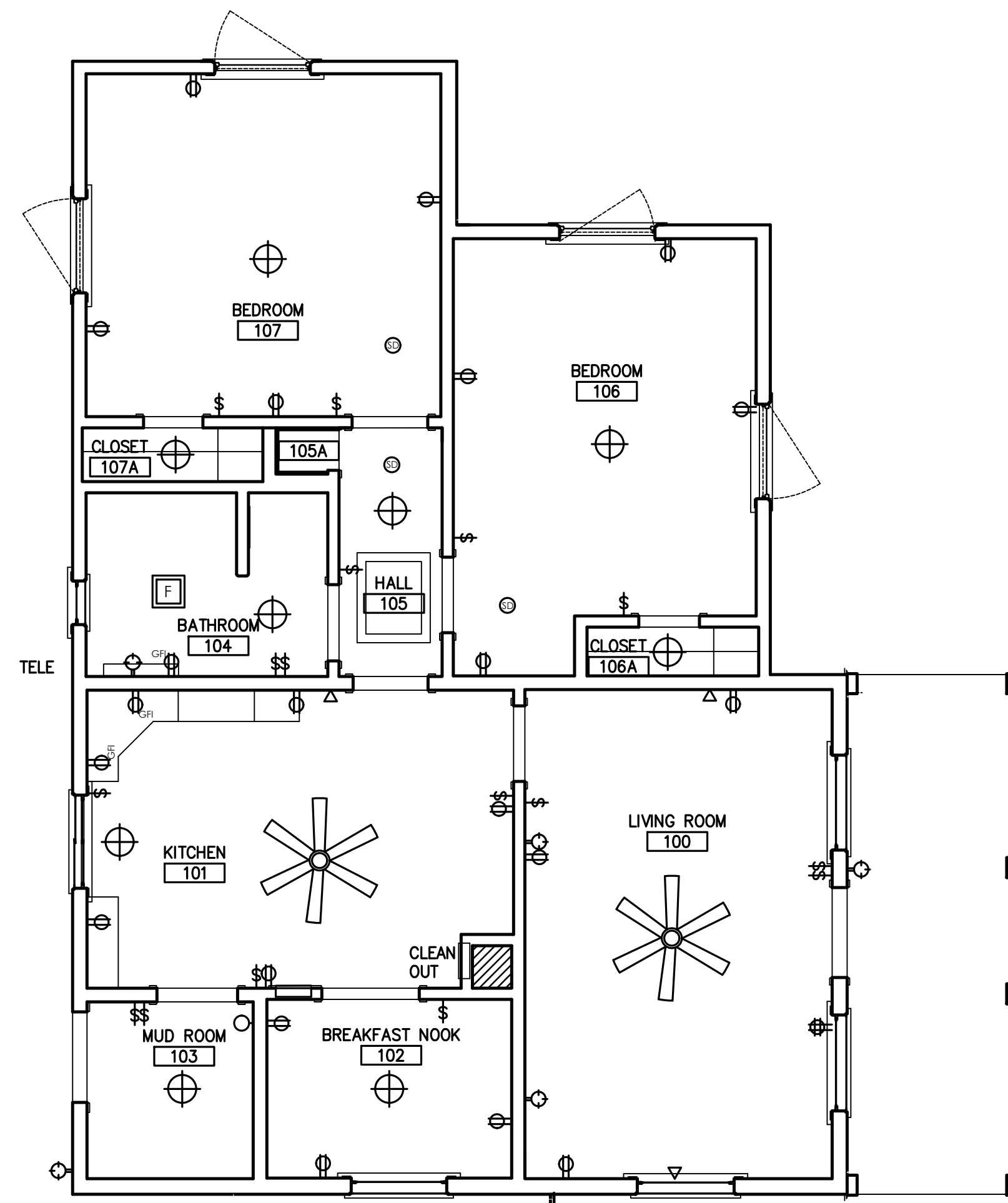
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A3

TITLE OF SHEET
EXISTING CONDITION DRAWINGS
HS-07
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

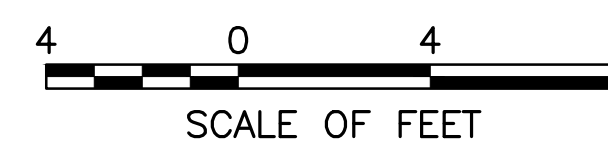
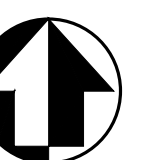
DRAWING NO.
108
128873
PMIS/PKG NO.
158029
SHEET
5 OF 6



1
EO
EXISTING HS-07 BASEMENT ELECTRICAL PLAN AND REFLECTED CEILING PLAN
1/4" = 1'-0"



1
EO
EXISTING HS-07 FIRST FLOOR ELECTRICAL PLAN AND REFLECTED CEILING PLAN
1/4" = 1'-0"



 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. EO	TITLE OF SHEET EXISTING CONDITION DRAWINGS HS-07 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK HOT SPRINGS, SOUTH DAKOTA	DRAWING NO. 108 128873 PMIS/PKG NO. 158029 SHEET 6 OF 6
	AM TECH. REVIEW: AG DATE: 10/23/15			



HS-07 1932, Jan. 4. (WICA Museum Collection #WICA 4271)

Treatment Recommendations

Treatment Recommendations

Introduction

This Historic Structure Report for the HS-07 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-07 was initially constructed in 1932. While the existing structure retains a substantial amount of architectural fabric dating to the period of significance, a few important exterior character-defining features are missing. Historical photographs have produced a fairly clear image of the exterior of the house throughout the period of significance, including photographs of some of the missing elements. These missing exterior elements include the multi-lite steel out-swing casement windows and the rustic board and batten shutters. Interior missing features include historic lighting.

The current use for the HS-07 Quarters is for seasonal housing for park staff and that use is not anticipated to change in the future. Identifying an appropriate historic treatment approach for the residence is important, in order to serve as a guideline for planning and design purposes.

Historic Treatment Approaches

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

Preservation: Sustaining the existing form, integrity, and materials of a property.

Restoration: Accurately depicting the form, integrity, and materials of a property as it appeared during a particular period.

Rehabilitation: Compatible use of a property through repair, alterations, and additions while preserving significant historical features.

Reconstruction: Depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape building, structure, or object at a specific period of time and in its historic location.

Selected Historic Treatment Approach - Rehabilitation

Rehabilitation was selected as the treatment approach in order to allow for the retention of historic authenticity while accommodating the installation of modern amenities. HS-07 is in very good overall condition, requiring maintenance and some rehabilitation to update finishes.

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

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

Construction Impact

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

Building Egress Fire Code Evaluation

The one story HS-07 was originally constructed in 1932 as a staff 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. The roughly 867 square foot house contains two bedrooms and one full bathroom. The park anticipates the continued use of the building as seasonal housing in the near future. This residence does not meet requirements of the ABAAS for accessibility. The park has other residential facilities to accommodate for accessible housing needs.

The applicable codes and guidelines for the project are:

- 2012 International Building Code (IBC)
- 2012 International Existing Building Code (IEBC)
- 2012 International Residential Code (IRC)
- National Fire Protection (NFPA)
 - 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.

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.⁷ 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.⁸ Pre-occupancy training may also include how to test smoke alarms and how to use fire extinguishers.⁹

⁷ Structural Fire Reference Manual 58, National Park Service, 2015, 5.

⁸ Department of the Interior Housing Management Handbook, April 2008, 6.

⁹ Ibid, 16.

Treatment Recommendations

With the intent of protecting the future integrity of the existing historic fabric and character defining features of the HS-07 Quarters, the following treatment recommendations are proposed. These recommendations were developed based on the assessment of the building during the two site visits in fall of 2014 and winter of 2015 and provide direction for immediate issues and long term historic treatment work.

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

Immediate Treatment Recommendations

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

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

General Treatment Recommendations

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

Immediate Treatment and Maintenance Repair Recommendations

Refer to the Treatment Recommendation Drawings.

Exterior

1. Re-grade –

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

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

2. Exterior Stone Foundation Cracks –

Repoint cracks in the stone foundation. The following cracks should be repointed and then monitored for future movement: vertical crack at southeast corner of porch; vertical crack between south porch step wall and east porch wall; vertical crack in east porch wall at the north end; and the vertical crack at northeast corner of the house. These cracks are vertical or show a possibility of rotation, which could indicate stone foundation settlement. Further study should be performed to determine the probability of continued settlement and the need for underpinning.

3. Stone Foundation –

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

4. Stone Porch Steps –

- Spot re-point porch steps, as required. Match historic mortar.
- Install a new galvanized painted handrail.

5. Stone Chimney –

- Remove metal strapping from chimney. Patch all holes, in kind.
- Replace missing stone at southwest corner of chimney.
- The stone chimney requires cleaning, spot repointing and mortar wash repair.
- If, after radon inspection, the chimney is not used to vent radon, install a new pre-finished metal chimney cap, per SMACNA standards.

6. Replace Windows –

Replace non-historic metal window sashes and storm windows in Living Room, Kitchen, Breakfast Nook, Mud Room and Bathroom with aluminum wood clad insulated windows (Windows 103, 104, 105, 106, 107 and 108). Total of six openings. The existing metal window sashes in these spaces are not energy efficient and are not in good working condition. Windows in the bedrooms have already been replaced with aluminum wood clad egress windows. These can be retained until a future phase of construction.

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

7. Stucco –
Repair cracks and crazing in stucco. These are prevalent along the west elevation, with a few on the east, south and north elevations.
8. Paint –
 - Paint exterior stucco after repairs are completed. New paint color to match historic stucco color, as defined in the Volume I, Historic Building Materials, Stucco section of this report. A Benjamin-Moore paint color match was determined, but must first be sampled, as recommended.
 - Trim color to match the historic trim color, as defined in the historic finished report.
9. Front Porch Repairs –
 - Repair wood wall cap. Prep, prime and paint.
 - Repair or replace wood porch flooring. Leave room at the perimeter for expansion and contraction of the wood flooring. Install edge trim at face. Seal flooring prior to installation and seal after.
10. Wood Louvers –
 - Repair north-facing louver.
 - Inspect all open wood louvers in the attic. Replaced screens, as required.
11. Storm Door 100/1 –
Remove existing deteriorated storm door. Install new storm door.
12. Inspect downspout drains -
Reinstall or install new downspout extensions to direct water away from the foundations.
13. Remove brush and overgrowth –
Remove all existing trees and overgrowth from around the stone foundation.
14. Bulkhead Repairs –
 - Add soil around bulkhead foundation.
 - Install handrail at stair.
 - Repair and paint door.
15. Storm window –
Remove existing broken storm window and install new storm window at Window 107.
16. Foundation vents –
 - Paint exposed east foundation vent. This vent is blocked due to the basement being semi-conditioned.
 - Remove existing vent from west wall after re-grading. This vent is partially buried below grade at this time. Infill and patch stucco.
17. Inspect cleanout in south wall. Determine its use. Remove if no longer required.

18. Install gutter covers to prevent pine needles from clogging the gutters.

Interior

19. Attic Framing -

The roof framing has bracing members that support the roof rafters and bear on the ceiling joists. This has resulted in cracking in the ceilings of Rooms 100 and 106. New 2x6 sister joists should be installed adjacent to each existing ceiling joist that is supporting a roof bracing member.

20. Basement 001 Repairs –

▪ **Anchor Steel Posts –**

Steel posts are currently supporting the wood girders in the basement. There are newer areas of concrete in the slab-on-grade below the posts indicating the possibility that footings were installed below the steel posts. The steel posts appear to be functioning adequately at this time, however there is no positive anchorage to the slab-on-grade or the girders. Post-installed anchors should be installed through the base plate into the slab-on-grade. SK-C/TS3 shows a detail for this repair. At the top of the post the cap plate should be anchored to the blocking with lag screws and the blocking should be screwed to the girders.

▪ **Install Footing –**

On the west side of the chimney there is a short steel post. The steel post should have a footing under it to carry the load. SK-A/TS3 shows a typical detail for a footing for this location. Temporary shoring should be installed prior to removing the existing short steel post and installing the footing.

▪ **Install Corbel Support –**

At the wood post in the center of the basement there is a corbel support for the girder on the north side of the post. The corbel appears to be functioning adequately at this time; however, the corbel should be strengthened. SK-B/TS3 shows a detail for this repair.

▪ **A floor joist adjacent to the west wall, below the kitchen sink area, was cut/notched. The joist should be strengthened by adding a sister joist to the existing joist. The sister joist can be a 2x4 to allow it to be installed over the drain line.**

21. Reconnect dryer vent through north wall.

22. North and South Crawl Spaces –

- Inspect existing insulation in first floor joists throughout the crawl space areas. Install insulation where there is no insulation.
- Install perimeter foundation wall insulation throughout basement.
- Install new twelve-mil vapor barrier throughout the crawl space areas.

23. Remove Unused Ductwork –

After hazardous materials testing and abatement, remove all unused ductwork from the basement. Patch subfloor and finish floor, as well as joists, as required, in kind.

24. Window Finish Rooms 106 and 107–

- Finish the interior of the existing bedroom egress windows. These were installed and never finished. Total 4 openings. These are to be stained to match the surrounding finish.

25. Plaster Repairs –

After structural stabilization in the attic and in the basement is completed, repair cracks throughout the house. Paint walls and ceilings when finished.

Mechanical/Plumbing/Electrical/Fire Protection Recommendations

Mechanical

26. 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.

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

28. Dryer Vent –

Install new dryer vent in the west exterior wall.

Clothes dryers are required to be vented to the exterior of the building (IMC Section 504).

29. Exhaust Fan –

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

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

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

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

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

Plumbing Systems

34. Verify that the existing equipment including accessories being reused for this project are not damaged and are in good working order.
35. 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.
36. If not existing, provide new access panels for existing plumbing at showers and bathtub or at any other location requiring maintenance access.
37. All vent piping penetrating through the roof should be 3-inch diameter minimum (IPC Section 903.2).
38. Prior to the occupied season, we recommend sanitizing 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 twenty-four 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.
 - Replace missing glass cover on the light fixture located in Bedroom 107.
42. The existing PVC piping in front of the service panelboard (located in Basement 001) may need to be relocated. The piping is located 35 ¾-inches from the face of the panel, a minimum of 36-inches is required by NEC Table 110.26(A)(1).

43. 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.
44. 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.
45. All GFCI receptacles should be tested to verify they are in working order. Ground-fault circuit interrupter protection for personnel should be installed in accordance with NEC 210.8(A)(1) through (10).
- All receptacles located in the basement should be replaced with GFCI receptacles or a GFCI circuit breaker protecting the receptacle.
 - The receptacles in Kitchen 101, not labeled as GFCI protected, should be replaced with GFCI receptacles or if they are protected by a GFCI upstream, they will need to be labeled.
 - The GFCI receptacle located on the west side of the building exterior should be inspected and replaced if the receptacle is not in accordance with NEC 406.9(B)(1).
46. 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.
47. Remove the unused Econotrol system in its entirety.

Telephone System

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

Fire Alarm System

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

Fire Protection System

51. 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.

Insulation

52. 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 the 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. These items include:

- A. Replace or retrofit existing bedroom replacement windows. The existing aluminum-clad wood egress casement windows installed in the bedrooms are fine replacement windows; however, the detailing at the exterior is not a historically appropriate solution and they do not replicate the original steel window lite configuration. The historic wood trim is panned and appears wider and the sills appear taller than the original historic windows. The detailing at the metal panning is not tidy and is installed so that the metal seams will shed water from the interior, only if the sealants are well maintained.
- B. Replicate and install rustic board and batten shutters with a diamond silhouette, per the historic drawings and photographs. These were installed on all four elevations.
- C. Install new carpeting.
- D. Painting throughout the house.
- E. Inspect original wood flooring in hall to see if it is able to be restored. Repair, replace and refinish, as required.
- F. Renovate bathroom.
- G. Renovate kitchen.
- 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.
- J. Inspect the north side of the stone chimney for a cricket. If one exists, it is not apparent from grade. If one does not exist, consider installing a cricket during the next roofing project.
- K. Conduct a historic hardware survey and restore all hardware.
- L. Inspect wall light fixtures in Living Room. Retain and re-wire, if necessary.
- M. Potentially convert Mud Room into a laundry room.
- N. Install new, historically appropriate back Door 103/1.

Long Term Mechanical/Plumbing/Electrical/Fire Protection Recommendations

The existing electric baseboard heating system is very costly to operate 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, South Dakota 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 supplemental electric heating system would most likely be required.

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

Ventilation

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

coordination with the Architect and the National Park Service to minimize impact on the building's historic integrity.

Plumbing

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

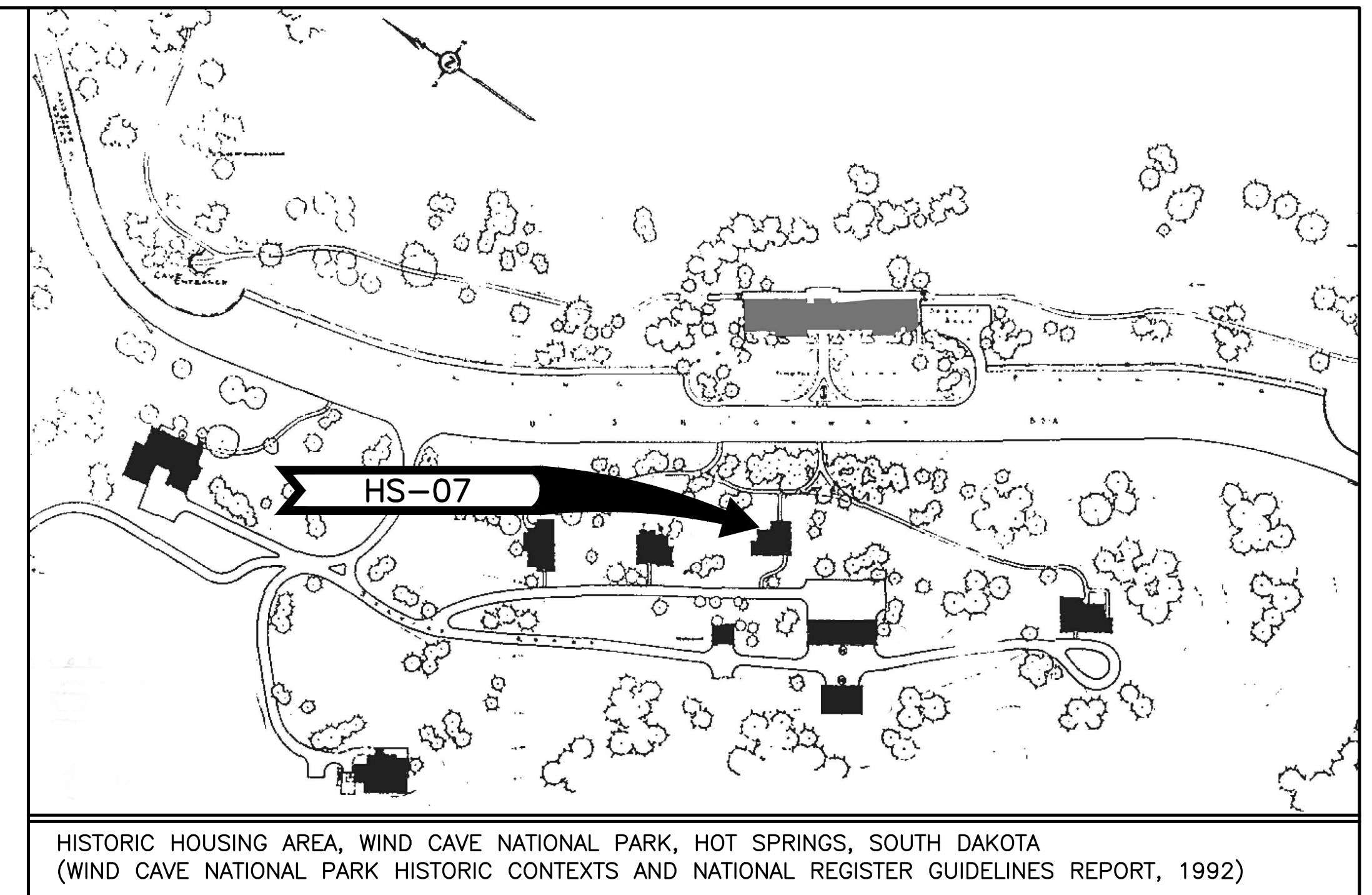
Electrical Systems

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

Fire Alarm Systems

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

HS-07 QUARTERS
HISTORIC STRUCTURES REPORT
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
TREATMENT RECOMMENDATION DRAWINGS
HOT SPRINGS, SOUTH DAKOTA



HS-07 QUARTERS (SRJA 2014)

INDEX OF DRAWINGS

00 COVER

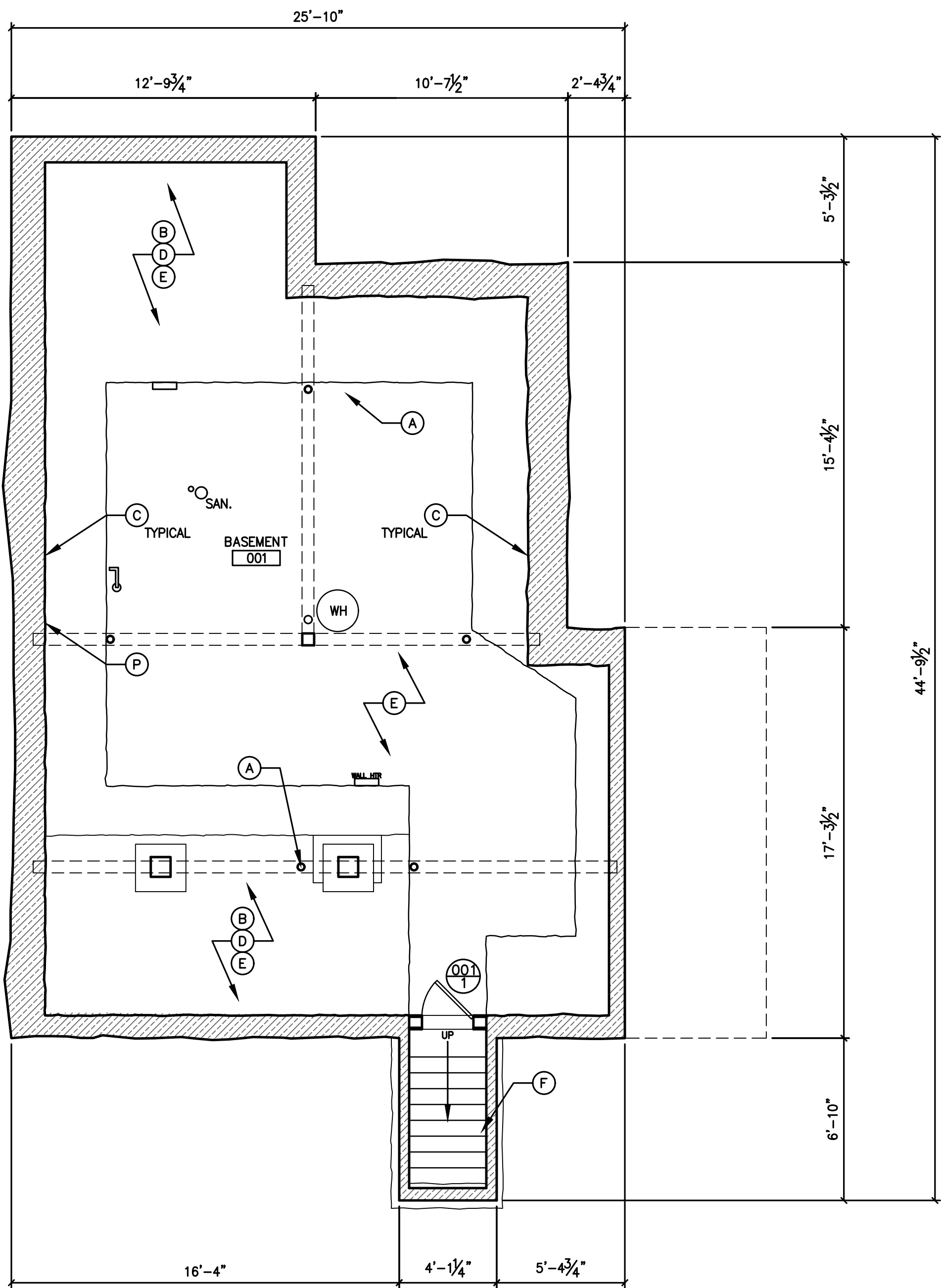
ARCHITECTURAL

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

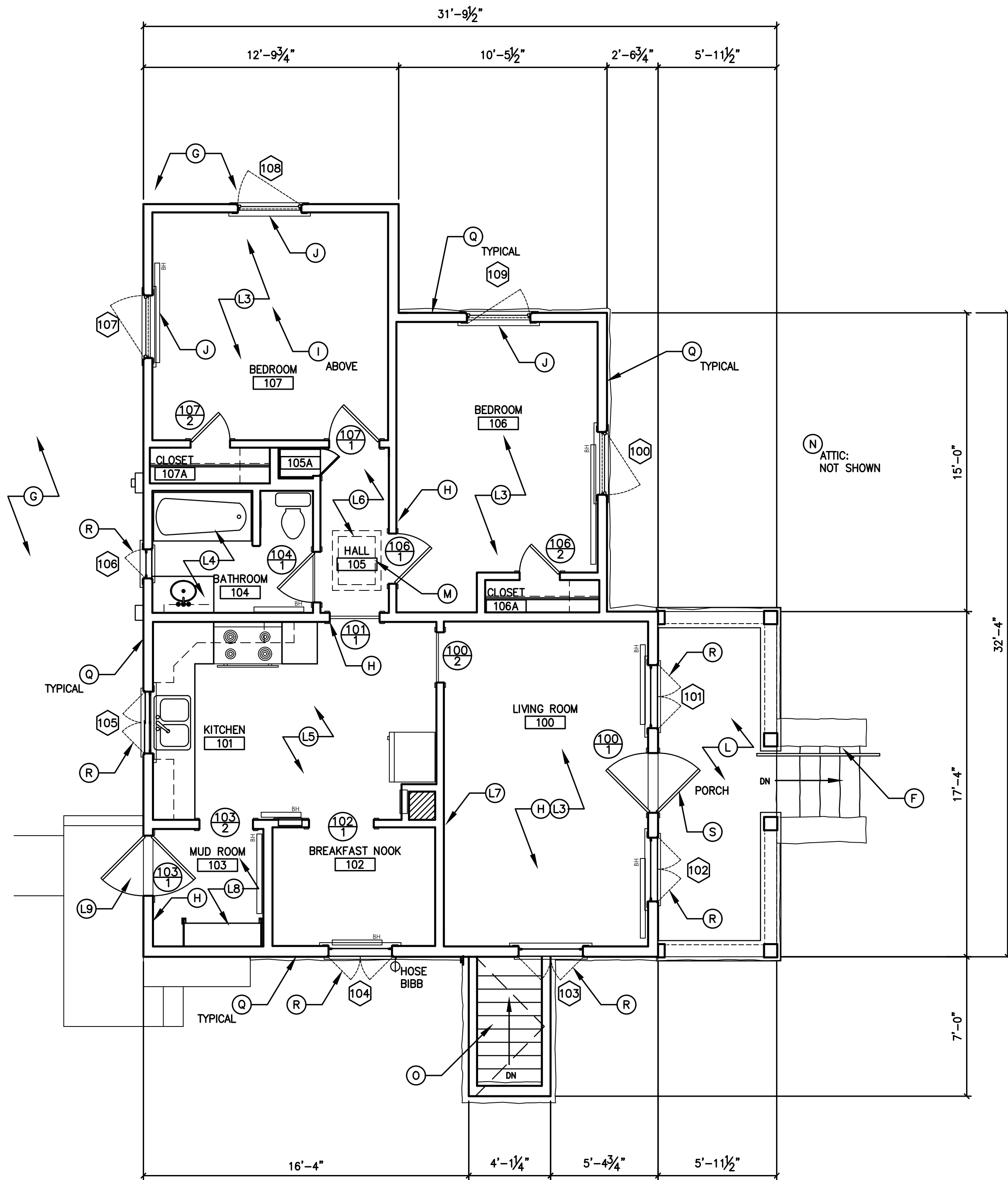
STRUCTURAL

TS0 BASEMENT/FOUNDATION FLOOR PLAN
TS1 STRUCTURAL DETAILS

	HISTORIC STRUCTURES REPORT	TITLE OF PROJECT TREATMENT RECOMMENDATION DRAWINGS HS-7 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK REGION COUNTY STATE MIDWEST CUSTER SOUTH DAKOTA		DRAWING NO. <u>108</u> 128874
	UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE DENVER SERVICE CENTER			PMIS/PKG NO. 158029
				SHEET <u>1</u> OF <u>7</u>



1 HS-07 IMMEDIATE AND LONG TERM TREATMENT — BASEMENT PLAN
TAO 1/4" = 1'-0"



1 HS-07 IMMEDIATE AND LONG TERM TREATMENT — FIRST FLOOR PLAN
TAO 1/4" = 1'-0"



GENERAL NOTES:

1. INVESTIGATE HOUSE FOR ASBESTOS CONTAINING MATERIAL AND ABATE, AS REQUIRED.
2. INSPECT RADON MITIGATION SYSTEM AND UPDATE, AS REQUIRED.

KEY NOTES:

IMMEDIATE TREATMENT SCOPE OF WORK:

- A. REFER TO STRUCTURAL REPAIR DRAWINGS.
- B. REMOVE UNUSED DUCTWORK. PATCH AND REPAIR SURROUNDING MATERIALS, AS REQUIRED.
- C. INSTALL PERIMETER REVERSIBLE FOUNDATION INSULATION.
- D. INSTALL NEW 12 MILL VAPOR BARRIER AT ALL EXPOSED SOIL IN CRAWL SPACES. WRAP MINIMUM 6" UP EACH WALL. OVERLAP SEAMS MINIMUM 8" AND TAPE FULLY.
- E. INSTALL NEW INSULATION AT FIRST FLOOR JOISTS.
- F. INSTALL GALVANIZED PAINTED HANDRAIL AT STEPS.
- G. RE-GRADE WEST AND NORTHWEST SIDES OF HOUSE. INSTALL SWALE AND FRENCH DRAIN. BURY DOWNSPOUTS. TO DRAIN TO DAYLIGHT. WILL REQUIRE DEMOLITION AND RECONSTRUCTION OF REAR CONCRETE LANDING AT DOOR 103/1 AT A LOWER ELEVATION.
- H. REPAIR CRACKS ON WALL AND CEILING OR DAMAGED PLASTER. MONITOR FOR FUTURE CRACKING/SETTLEMENT. PREP, PRIME AND PAINT, AS REQUIRED.
- I. INSTALL NEW GLASS SHADE AT CEILING LIGHT.
- J. STAIN/FINISH INTERIOR WINDOWS.
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- L. REPAIR/REPLACE PORCH FLOOR.
- M. INSULATE AND WEATHERSTRIP SCUTTLE ACCESS PANEL.
- N. INSTALL EXTRA INSULATION IN ATTIC.
- O. PREP, PRIME AND PAINT BULKHEAD DOOR.
- P. VENT DRYER TO WEST ELEVATION.
- Q. INVESTIGATE EXTERIOR WALLS FOR EXISTING INSULATION. INSTALL SUPPLEMENTAL INSULATION, AS REQUIRED.
- R. REMOVE EXISTING NON-HISTORIC WINDOW SASHES. INSTALL NEW HISTORICALLY APPROPRIATE ALUMINUM CLAD WOOD CASEMENT WINDOWS.
- S. REMOVE EXISTING DETERIORATED STORM DOOR AND REPLACE WITH NEW DOOR.
- T. INSTALL GUTTER COVERS.

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 BATHROOM.
 - L5. RENOVATE THE KITCHEN. IF A KITCHEN WHICH IS MORE PERIOD APPROPRIATE IS DESIRED, CONSULT WITH THE HISTORIC DRAWINGS FOR PRECEDENT CABINETRY DESIGN.
 - L6. INSPECT ORIGINAL WOOD FLOOR IN HALLWAY. REPAIR AND RESTORE.
 - L7. INSPECT HISTORIC WALL SCONCE LIGHTING IN LIVING ROOM. RE-WIRE IF NECESSARY.
 - L8. POTENTIALLY CONVERT MUD ROOM INTO A FIRST FLOOR LAUNDRY ROOM.
 - L9. INSTALL NEW, HISTORICALLY APPROPRIATE BACK DOOR 103/1.
 - L10. 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.
 - L11. INSPECT NORTH SIDE OF STONE CHIMNEY FOR CRICKET. IF ONE DOES NOT EXIST, INSTALL A NEW CRICKET DURING THE NEXT ROOF REPLACEMENT PROJECT.

- MECHANICAL/ELECTRICAL/PLUMBING WORK:
- L12. CONSIDER INSTALLATION OF A HIGH-EFFICIENCY FORCED AIR HVAC SYSTEM, PER THE RECOMMENDATIONS.
 - L13. INSTALL A BACKFLOW PREVENTER ON THE DOMESTIC WATER ENTRY.
 - L14. BRING EXISTING ELECTRICAL DISTRIBUTION SYSTEM UP TO CODE, PER RECOMMENDATIONS.
 - L15. INSTALL AUDIBLE FIRE ALARM TO THE EXISTING SYSTEM.

DRAWING KEY:

 MASONRY FOUNDATION WALLS



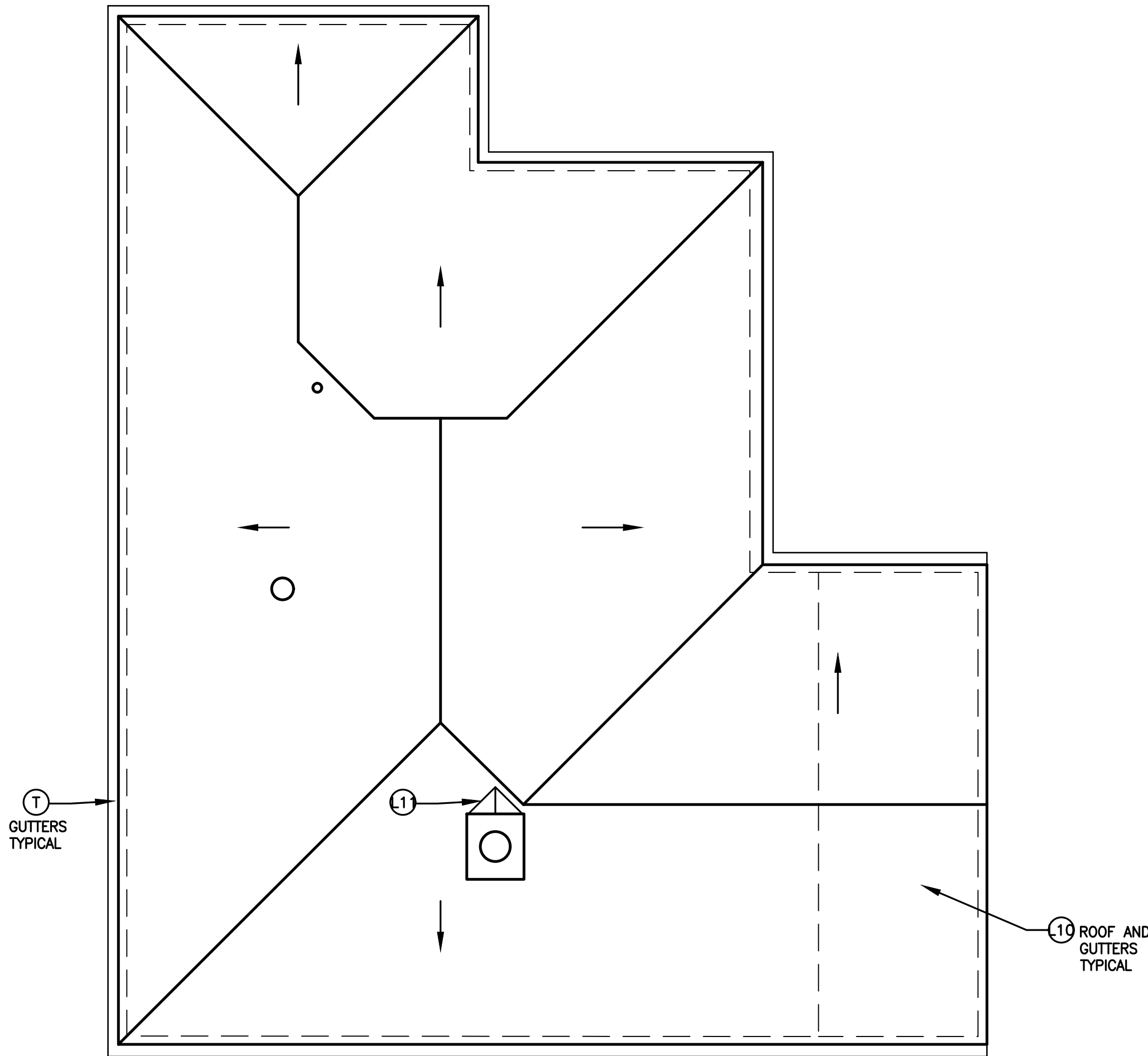
Susan Richards
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Ph. 816-474-0900
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DESIGNED:
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DATE:
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SUB SHEET NO.
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TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-07
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

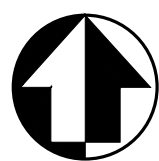
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TA1

HS-07 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS – ROOF PLAN

1/4" = 1'-0"



 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. TA1	TITLE OF SHEET TREATMENT RECOMMENDATION DRAWINGS HS-07 QUARTERS HISTORIC HOUSING AREA WIND CAVE NATIONAL PARK HOT SPRINGS, SOUTH DAKOTA	DRAWING NO. 108 128874
	AG			PMIS/PKG NO. 158029
	TECH. REVIEW: AG			SHEET
	DATE: 1/27/16			3 of 7

GENERAL NOTES:

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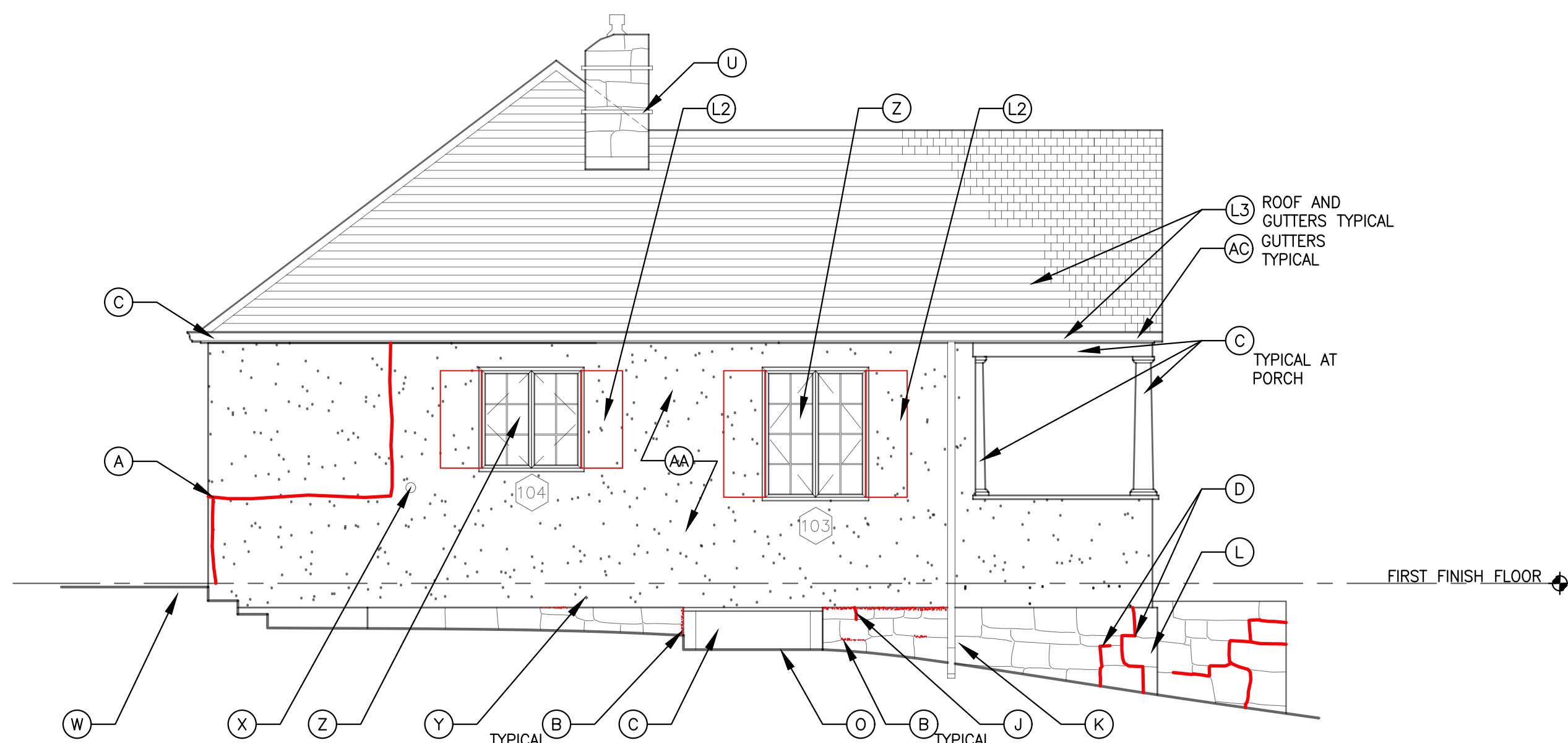
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2. SPOT REPOINT AS REQUIRED. NEW MORTAR SHOULD MATCH EXISTING IN COMPOSITION, COLOR, TEXTURE AND PROFILE.
3. CLEAN ALL STONE TO REMOVE DIRT AND BIOLOGICAL GROWTH.

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- B. REPOINT EXISTING MORTAR JOINTS AND RESTORE MORTAR WASH AS TOP OF FOUNDATION.
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- H. VERIFY IF SCREENING IS IN PLACE. REPAIR AS REQUIRED.
- I. PATCH AND REPAIR DETERIORATED WOOD RAILING.
- J. PATCH AND REPAIR CRACK IN STONE.
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- M. INSTALL SEALANT IN EXISTING JOINT.
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- Y. REMOVE SPRAY FOAM INSULATION AND INSTALL SEALANT AT PIPE.
- Z. REMOVE EXISTING METAL SASHES. INSTALL NEW HISTORICALLY APPROPRIATE ALUMINUM OUTSWING CASEMENT WITH DIVIDED LITES.
- AA. PAINT STUCCO AFTER REPAIRS
- AB. EXISTING WINDOW TO REMAIN. REPLACE IN FUTURE PHASE.
- AC. INSTALL GUTTER COVERS.

LONG TERM TREATMENT SCOPE OF WORK:

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- L2. INSTALL REPRODUCTION WOOD SHUTTERS TO MATCH THE ORIGINAL HISTORIC SHUTTERS.
- L3. WHEN THE EXISTING ROOF IS READY FOR REPLACEMENT, CONSIDER THE DECRA METAL REPLACEMENT ROOFING SYSTEM OR ONE OF THE OTHER RECOMMENDED REPLACEMENT ROOFS DISCUSSED IN THE TREATMENT RECOMMENDATIONS. REPLACE GUTTERS AND DOWNSPOUTS WITH REPRODUCTION METAL GUTTERS AND DOWNSPOUTS.
- L4. INSPECT NORTH SIDE OF STONE CHIMNEY FOR CRICKET. IF ONE DOES NOT EXIST, INSTALL A NEW CRICKET DURING THE NEXT ROOF REPLACEMENT PROJECT.



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TA2 1/4" = 1'-0"



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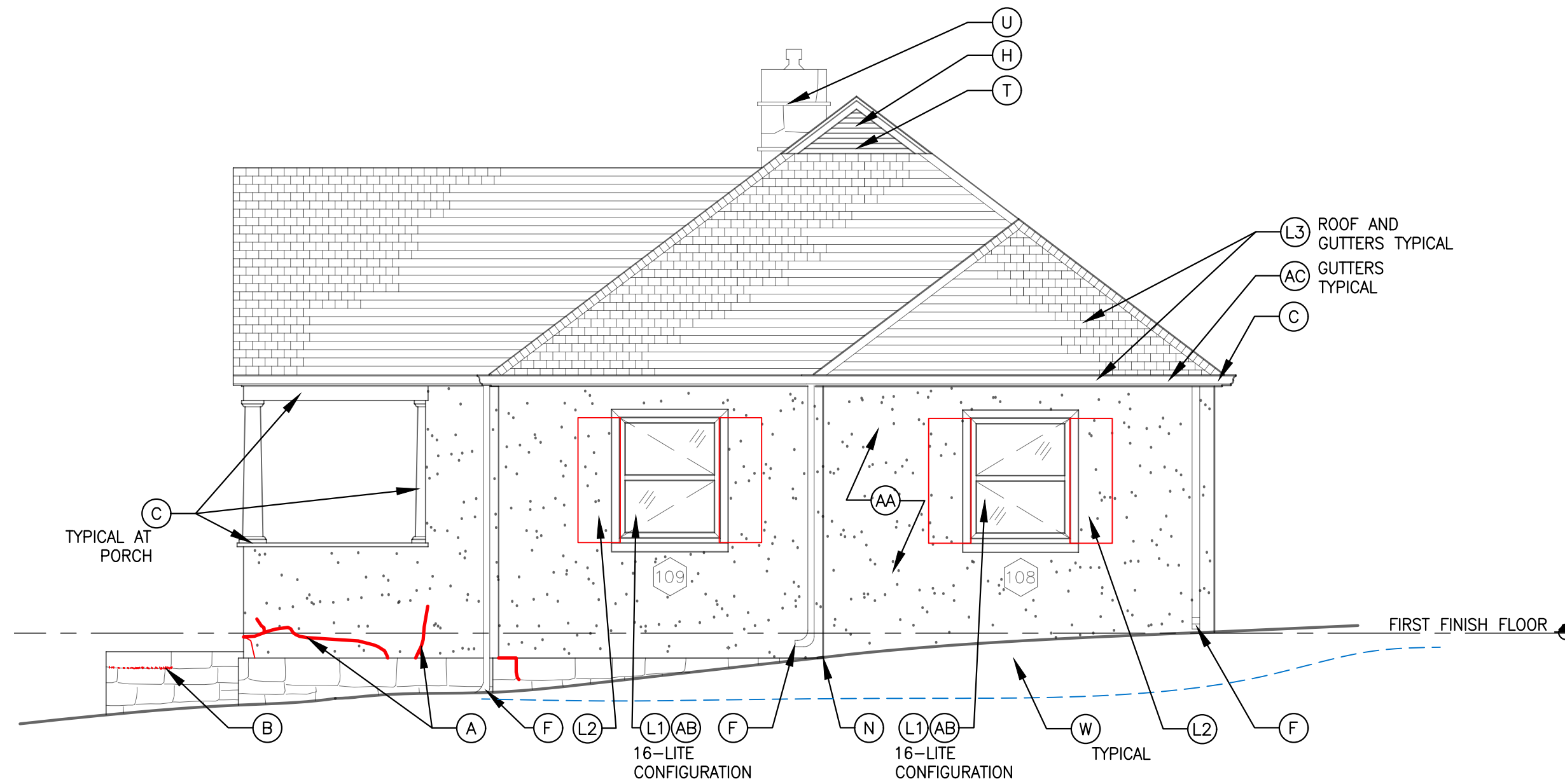
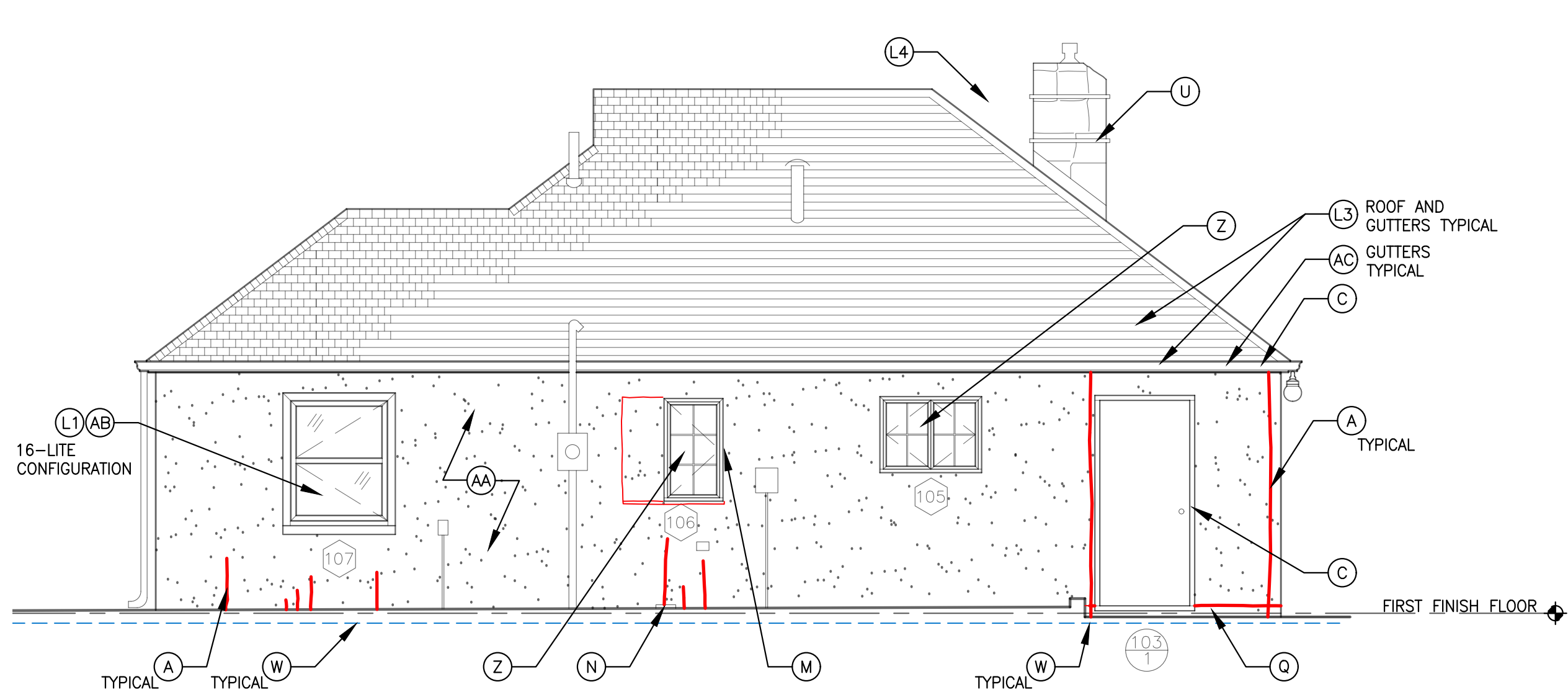
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TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-07
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

DRAWING NO.
108
128874

PMIS/PKG NO.
158029

SHEET
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1 HS-07 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS - WEST ELEVATION
TA3 1/4" = 1'-0"

2 HS-07 IMMEDIATE AND LONG TERM TREATMENT DRAWINGS - NORTH ELEVATION
TA3 1/4" = 1'-0"

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SCALE OF FEET

Susan Richards
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SUB SHEET NO.
TA3

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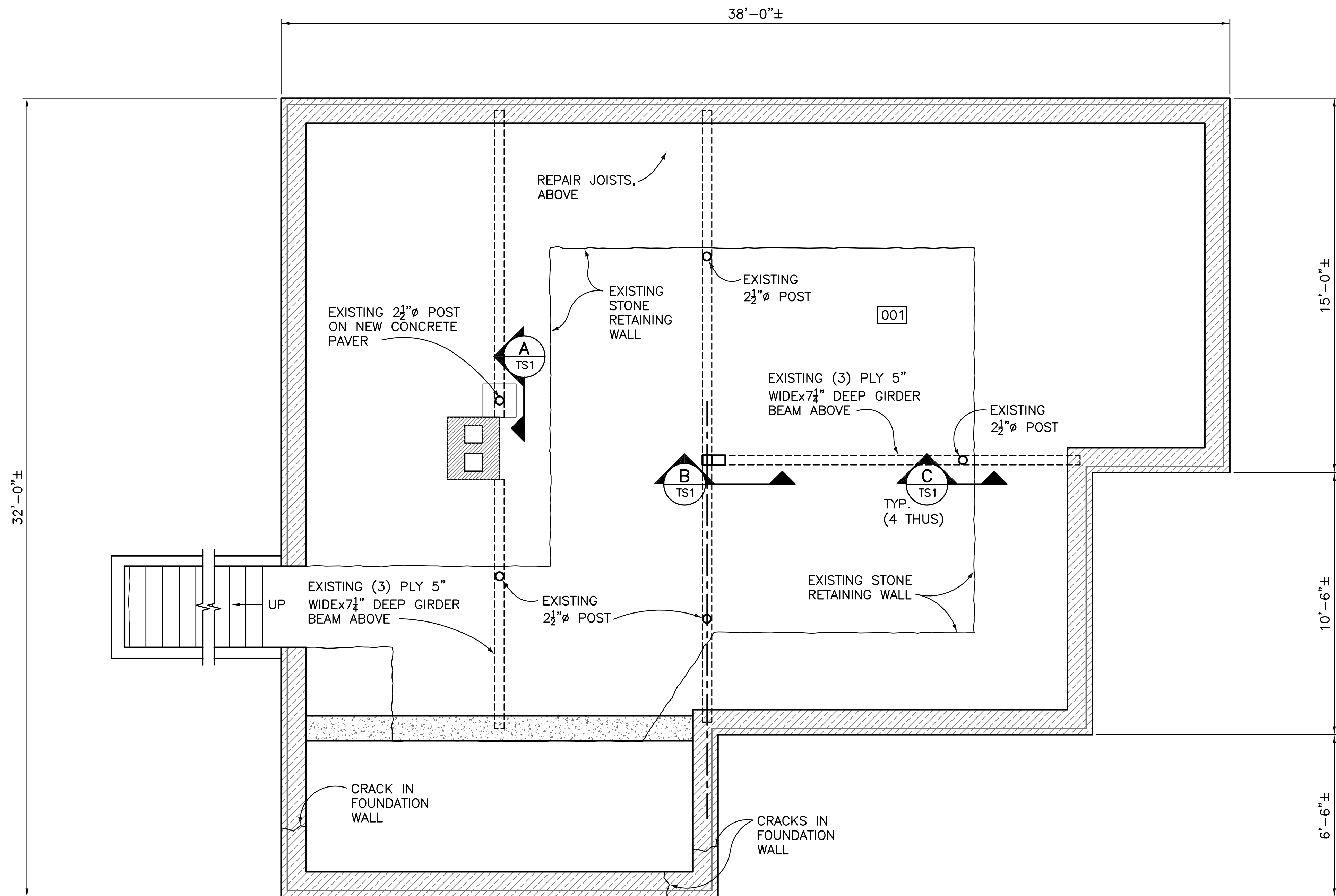
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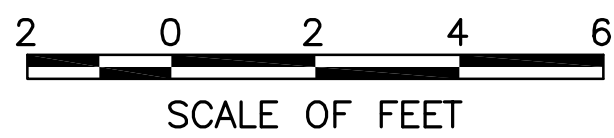
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- L2. INSTALL REPRODUCTION WOOD SHUTTERS TO MATCH THE ORIGINAL HISTORIC SHUTTERS.
- L3. WHEN THE EXISTING ROOF IS READY FOR REPLACEMENT, CONSIDER THE DECRA METAL REPLACEMENT ROOFING SYSTEM OR ONE OF THE OTHER RECOMMENDED REPLACEMENT ROOFS DISCUSSED IN THE TREATMENT RECOMMENDATIONS. REPLACE GUTTERS AND DOWNSPOUTS TO MATCH THE HISTORIC BOX GUTTERS.
- L4. INSPECT NORTH SIDE OF STONE CHIMNEY FOR CRICKET. IF ONE DOES NOT EXIST, INSTALL A NEW CRICKET DURING THE NEXT ROOF REPLACEMENT PROJECT.

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



LEGEND	
	EXISTING STONE FOUNDATION
	EXISTING CONCRETE WALL
	EXISTING BRICK WALL

1 BASEMENT FOUNDATION PLAN
TS0 3/8"=1'-0"



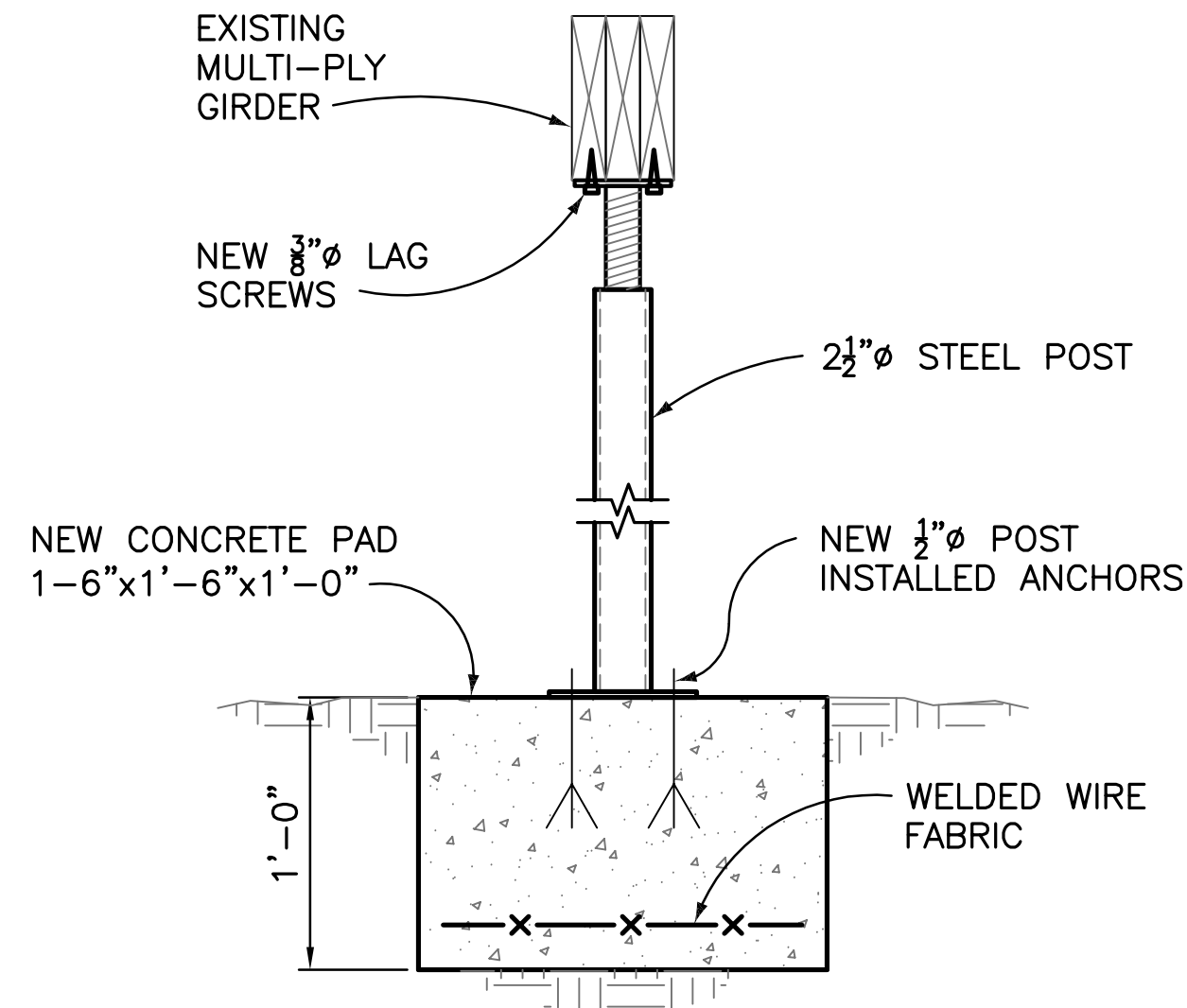
STRUCTURAL
ENGINEERING
ASSOCIATES, INC.
1000 WALNUT
SUITE 1570 KANSAS
CITY, MO 64106
Ph. 816-421-1042
Fax 816-421-1061

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

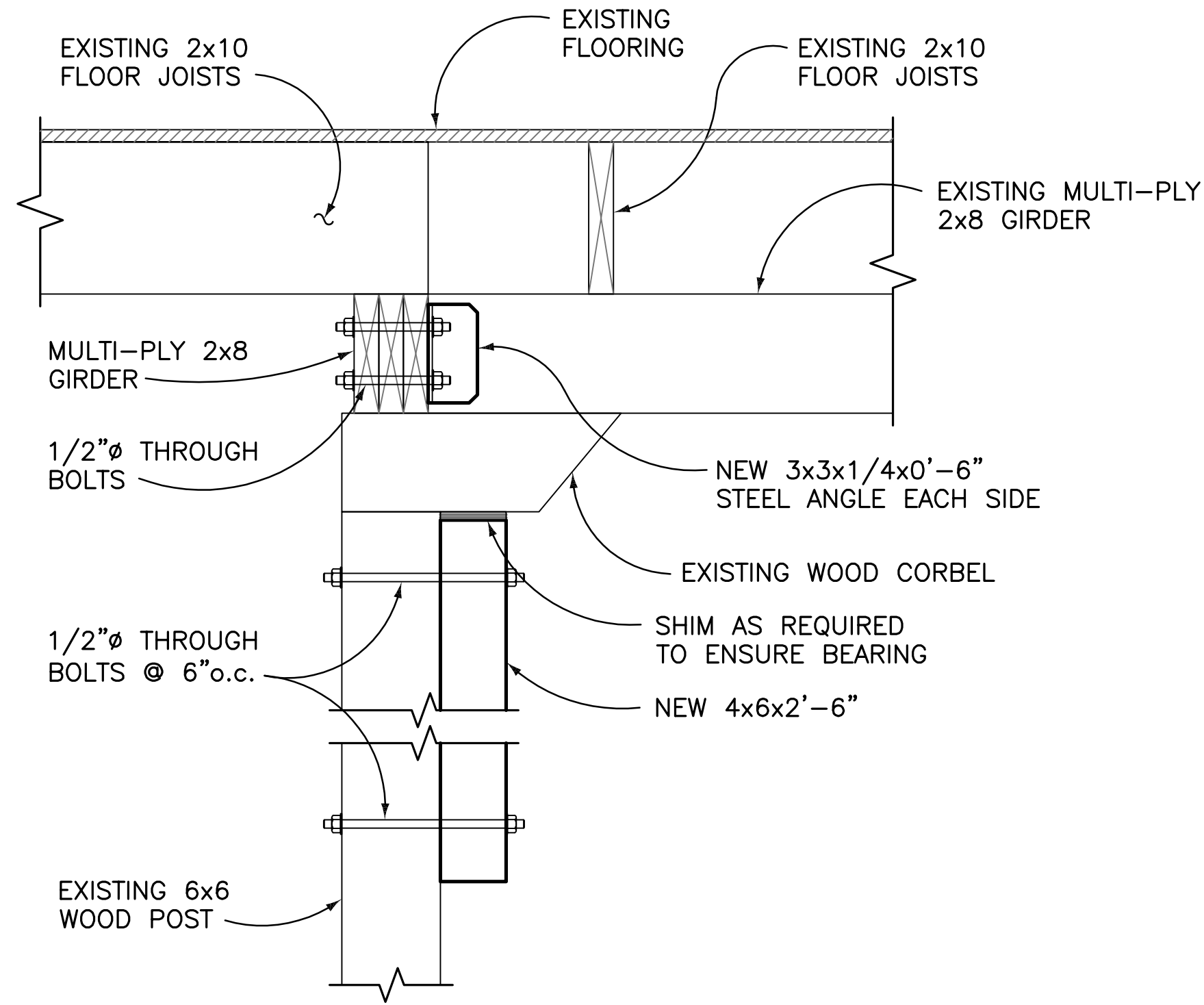
SUB SHEET NO.
TS0

TITLE OF SHEET
TREATMENT RECOMMENDATION DRAWINGS
HS-07
QUARTERS
HISTORIC HOUSING AREA
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

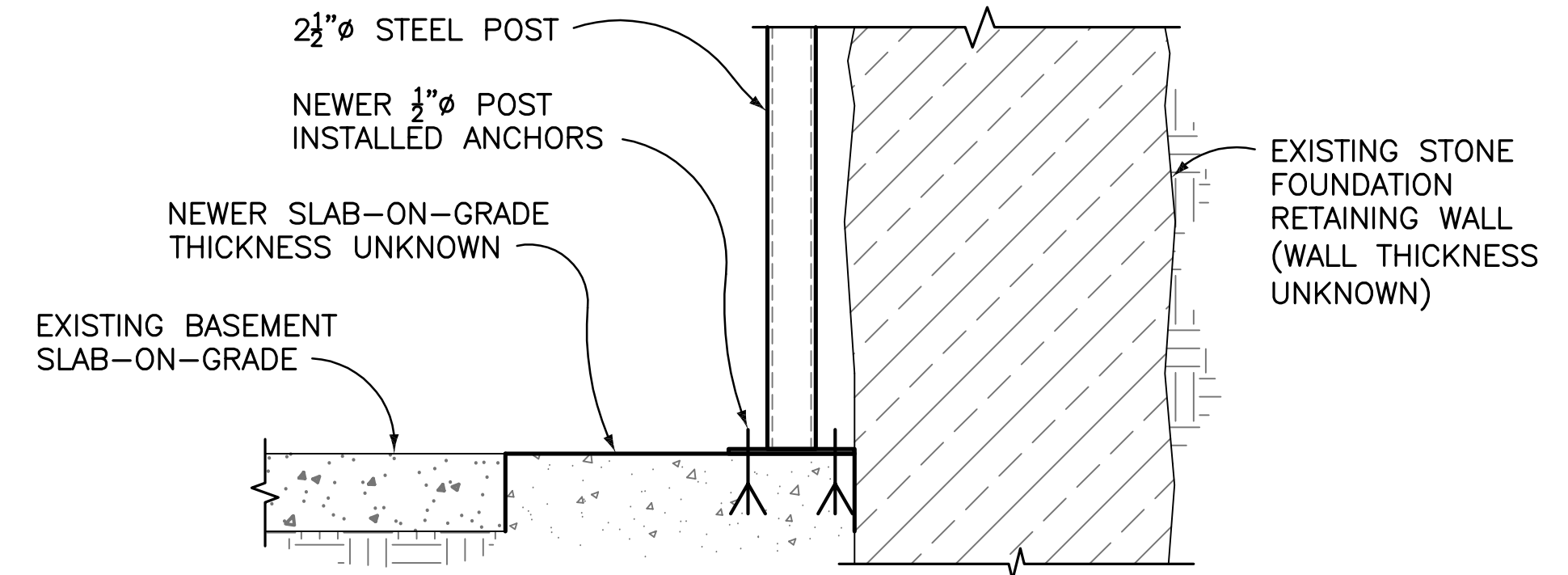
DRAWING NO.
108
128874
PMIS/PKG NO.
158029
SHEET
6 OF 7



A FOOTING FOR STEEL POST
TS1 1 1/2" = 1'-0"



B CORBEL SUPPORT
TS1 1 1/2" = 1'-0"



C STEEL POST BASE ANCHORAGE
TS1 1 1/2" = 1'-0"

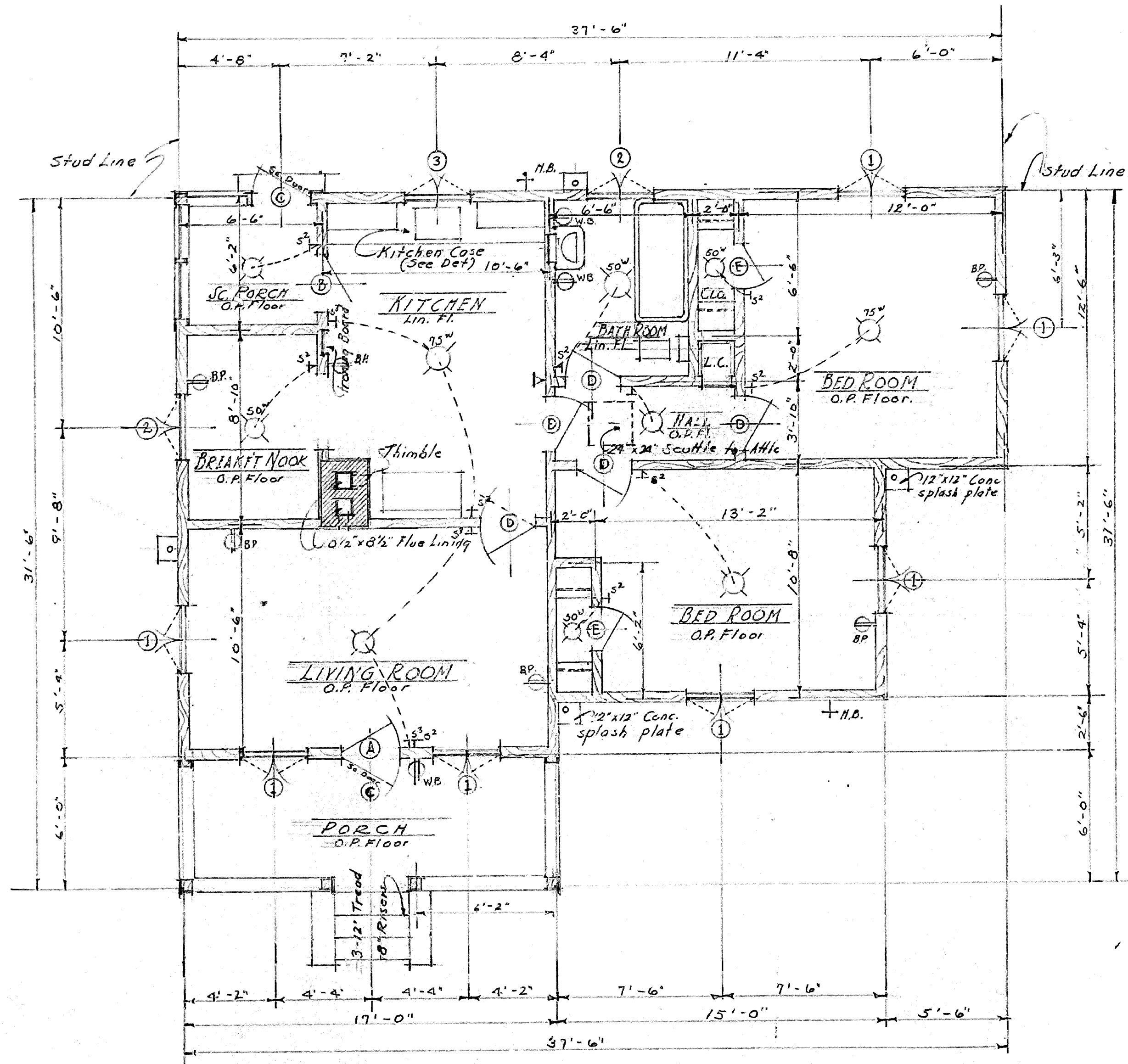


HS-07 1933, Mar. 7. (WICA Museum Collection #WICA 4308)

Appendix A Historic Drawings

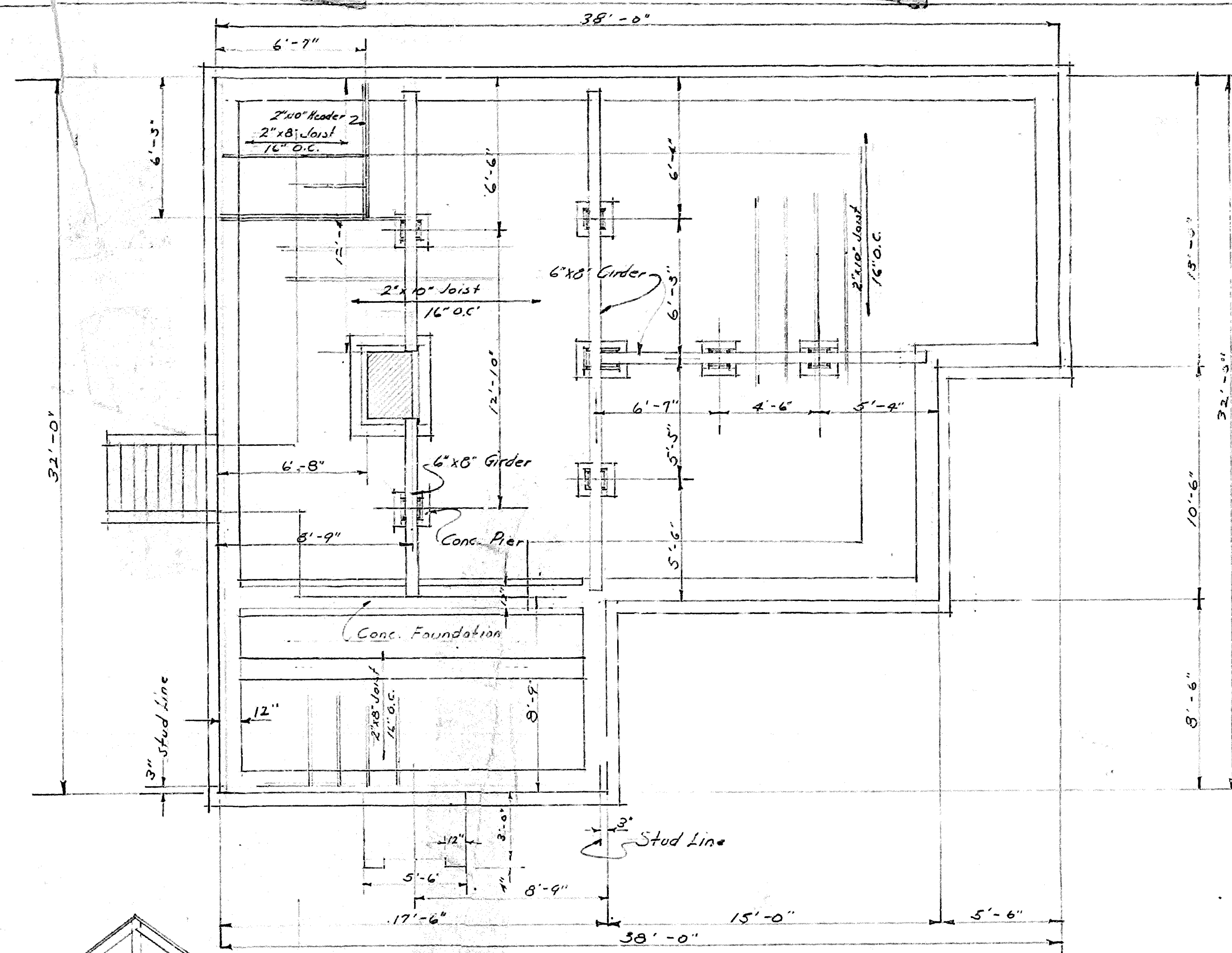
Appendix A
HS-07 Plan Pages

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	File Name	Building Number	Drawing Title	Issuing Office at US Dept of Int.	Drawn by	Drawing Date	Sheet # of #	Public Works Project No.	Recommended by and title	Recommend ed Date	Approved by and title	Approval Date	Job Completed Date	Notes
2	WICA_108_1000A_[id278465] Also recorded as WICA_108_1000A_[id192697]	HS 07	Employee's Residence	Landscape Division	H. W. B.	8/31/1931	1 of 3		Thomas C. Vint, Chief Landscape Architect	9/5/1931	Plans not signed	No Date	2/26/1932	Floor Plan, Foundaton Plan, 1 section, dorr detail
3	WICA_108_1000A_[id278465] Also recorded as WICA_108_1000A_[id192697]	HS 07	Employee's Residence	Landscape Division	H. W. B.	8/31/1931	2 of 3		Thomas C. Vint, Chief Landscape Architect	9/5/1931	Plans not signed	No Date	2/26/1932	Elevations
4	WICA_108_1000A_[id278465] Also recorded as WICA_108_1000A_[id192697]	HS 07	Employee's Residence	Landscape Division	H. W. B.	8/31/1931	3of 3		Thomas C. Vint, Chief Landscape Architect	9/5/1931	Plans not signed	No Date	2/26/1932	Window and door dtail, kitchen detail, section of footing, roof wall detail
5	WICA_108_3019_[id3239]	HS 07	Planting for Residence No. W.C. 1000A	Branch of Plans and Design, NPS	S.S.	10/15/1934	1 of 1	4	W.G. Carnes, Act. Chief Architect	10/23/1934	Arno B Cammerer/ Director NPS	11/15/1934		Site Plan with plantings and legend. SS may refer to S.Serrano (see monthly Supt. Reports, 1937)
6	WICA_108_1000C_[id278466] and Wind Cave 258, 260	HS 07	Addition to Employee's Residence No. 3	Regional Office 2 Branch of Plans and Design	Possibly Wilfred S. Hill. Designed by L.E. Wilkie	11/22/1939	1 of 1		Wilford G. Hill/ Acting Regional Landscape Architect	12/12/1939	Thomas J Allen Jr.?/ Regional Director			Handwritten notes on plans have residence #3 circled with "This alteration never made, see 1000b." Elevations, window and door detail, foundation and first floor plan.

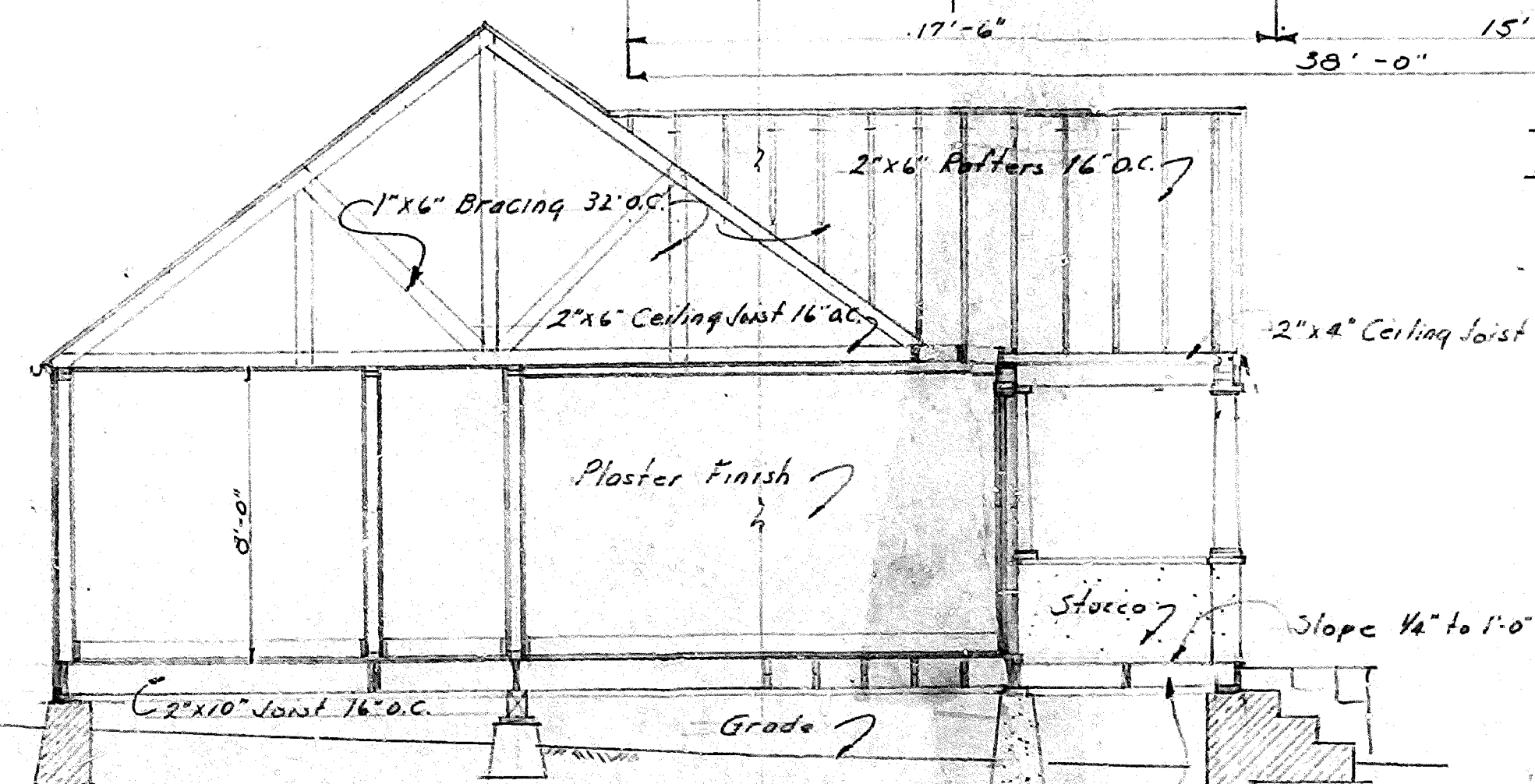


FLOOR PLAN
Scale 1/4" = 1'-0"

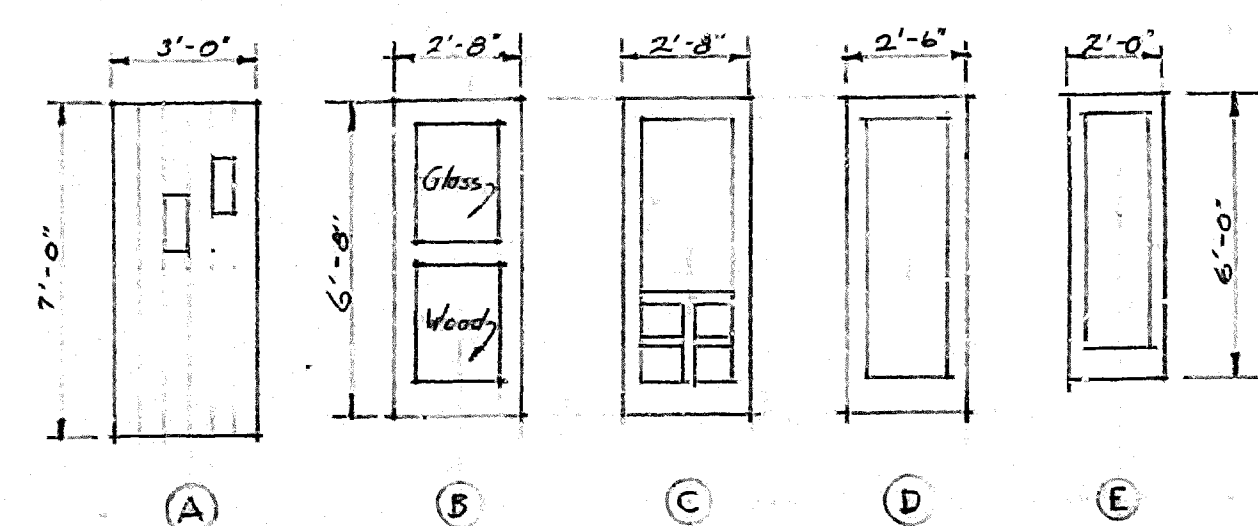
- ① 3'-1 1/2" x 4'-3 3/4" Truscon Steel Casements or equal
- ② 3'-1 1/2" x 3'-3 1/2" Truscon Steel Casements or equal
- ③ 3'-1 1/2" x 2'-3 1/4" Truscon Steel Casements or equal



FOUNDATION PLAN
Scale 1/4" = 1'-0"



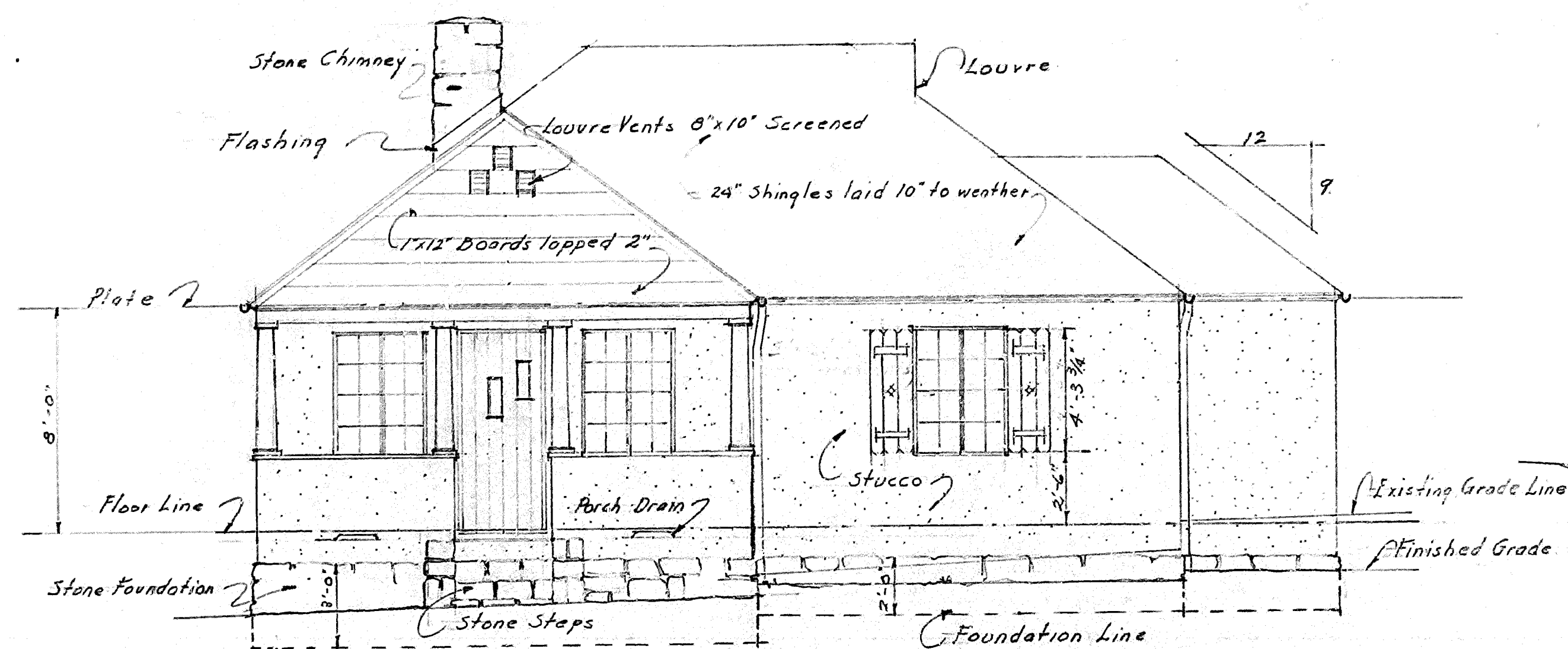
SECTION B-B
Scale 1/4" = 1'-0"



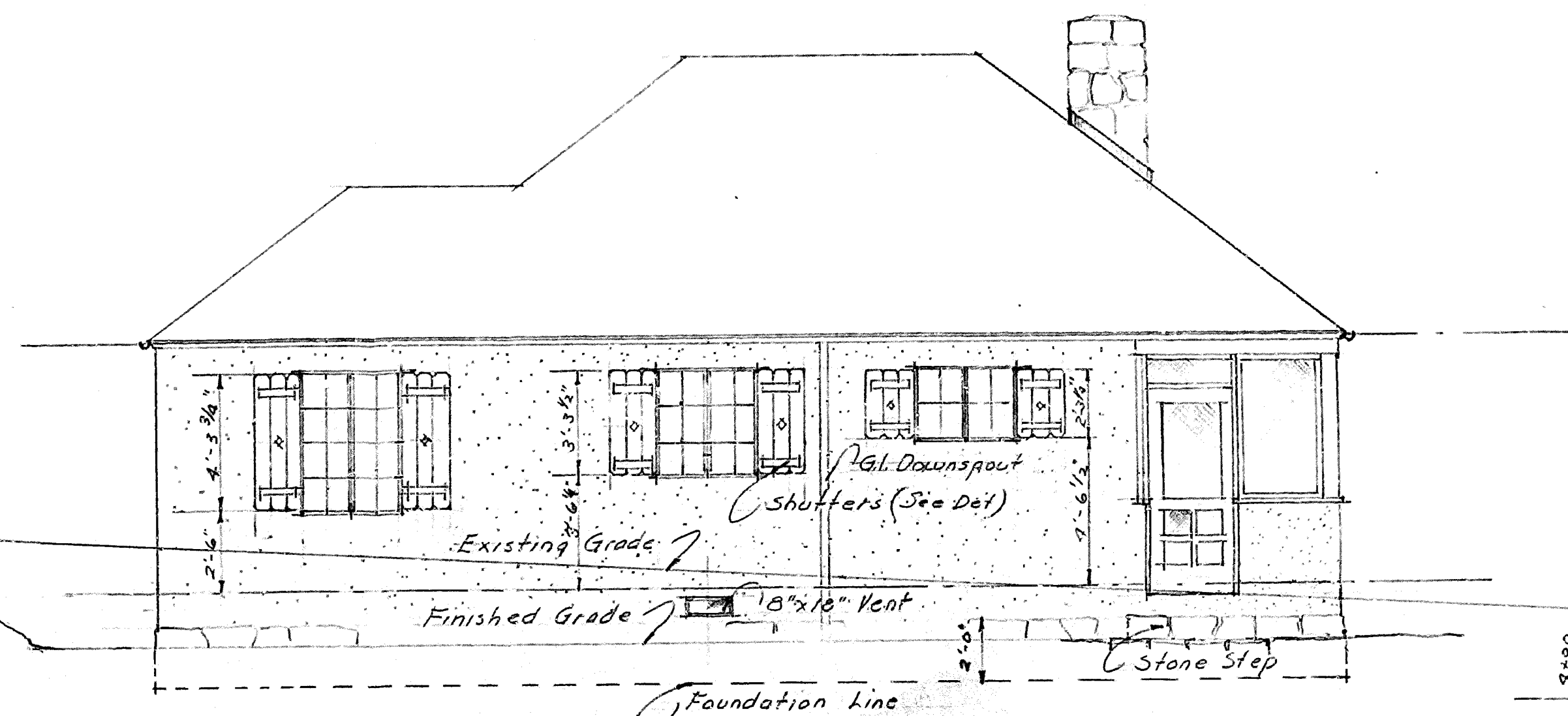
DOOR SCHEDULE
Scale 1/4" = 1'-0"

Dr. By H.W.D.	Recommended	Chief Landscape Architect	Date 9/1/51	U.S. DEPARTMENT OF INTERIOR - NATIONAL PARK SERVICE	Date 8-31-51
Ck. By H.W.D.	Concurred	Superintendent	Date	WIND CAVE NATIONAL PARK	Sheet 1 of 3 Sheets
	Approved	Director National Park Service	Date	EMPLOYEES RESIDENCE	Job N°
				DESIGNED BY LANDSCAPE DIVISION	WC 1000-A

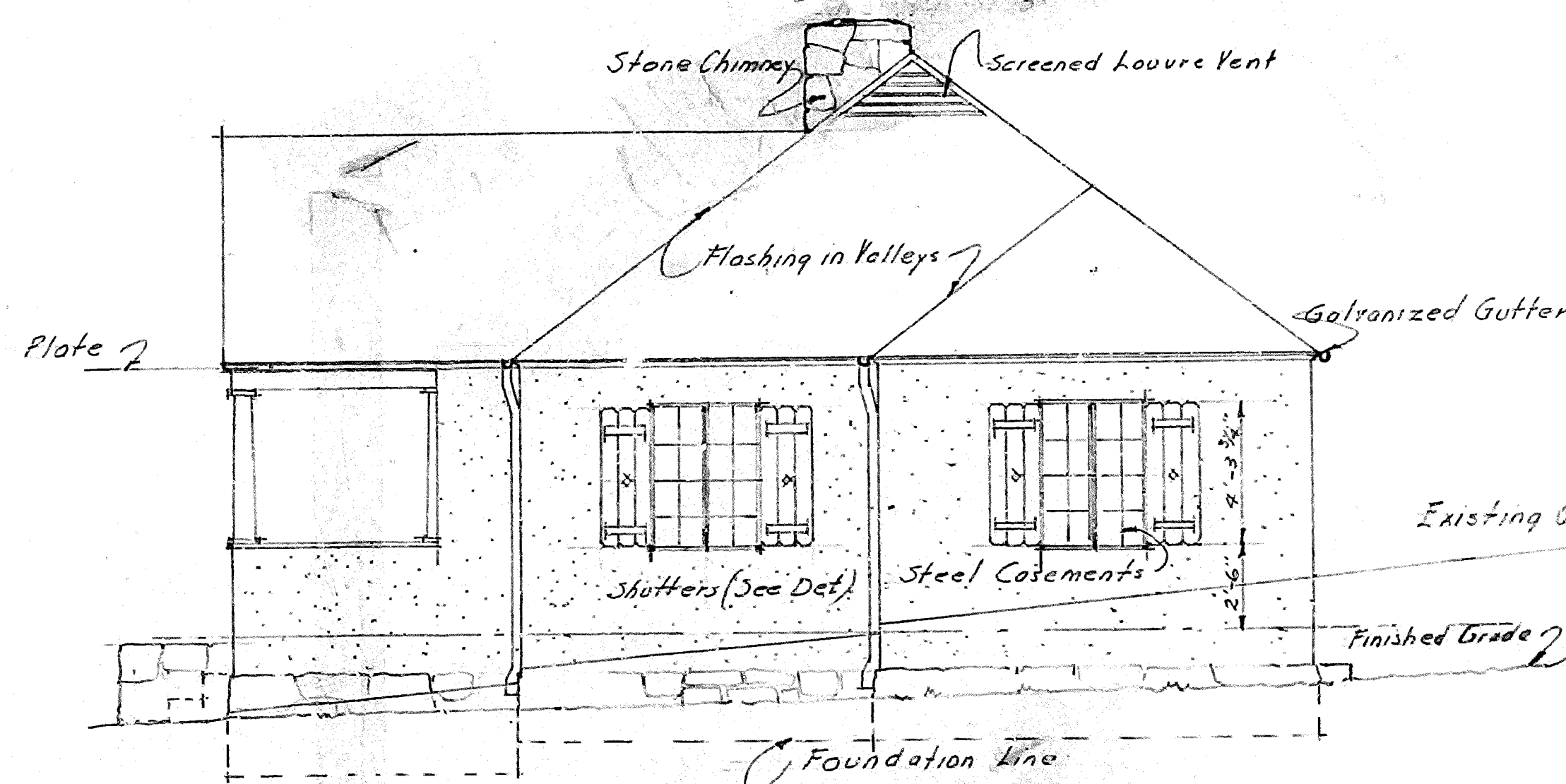
Job completed 2-26-52 P



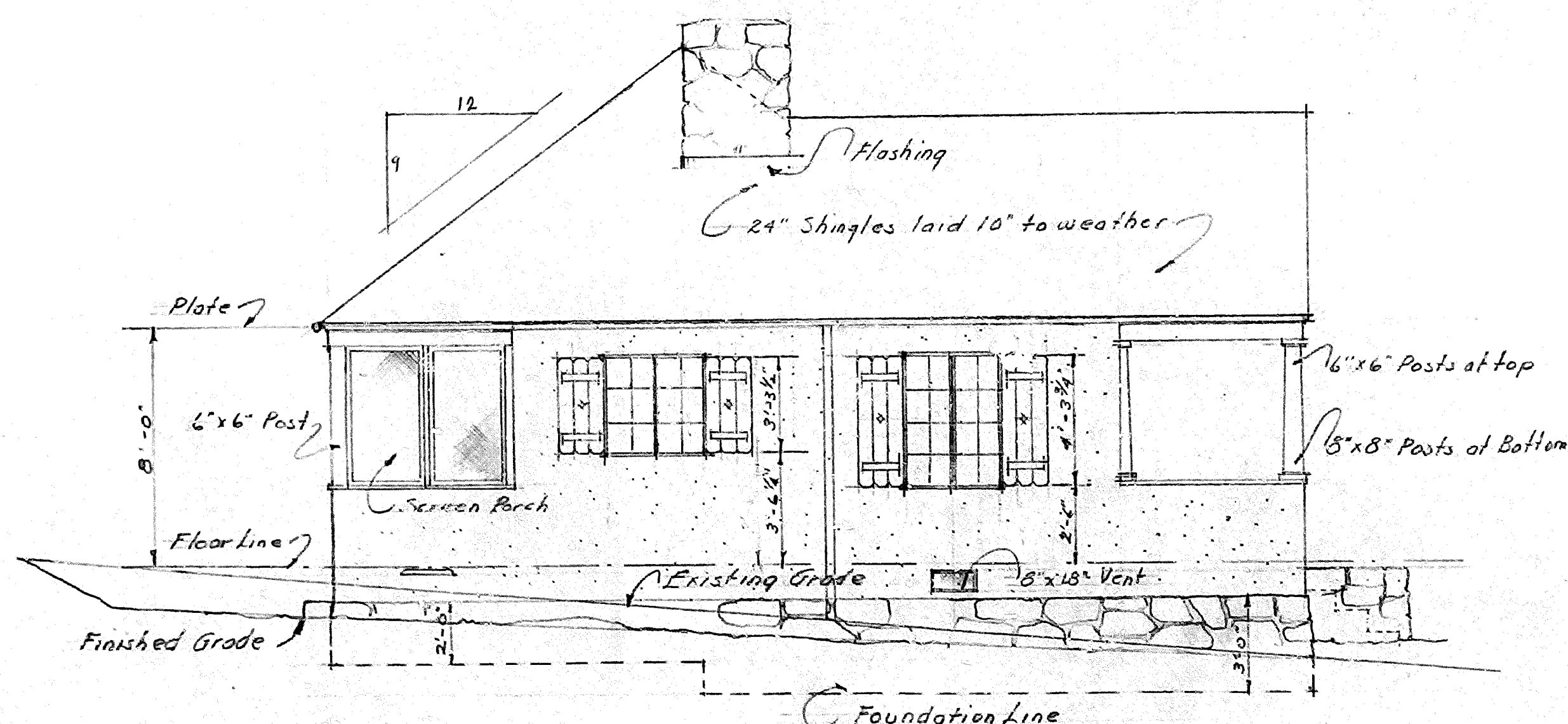
EAST ELEVATION
Scale 1/4" = 1'-0"



WEST ELEVATION

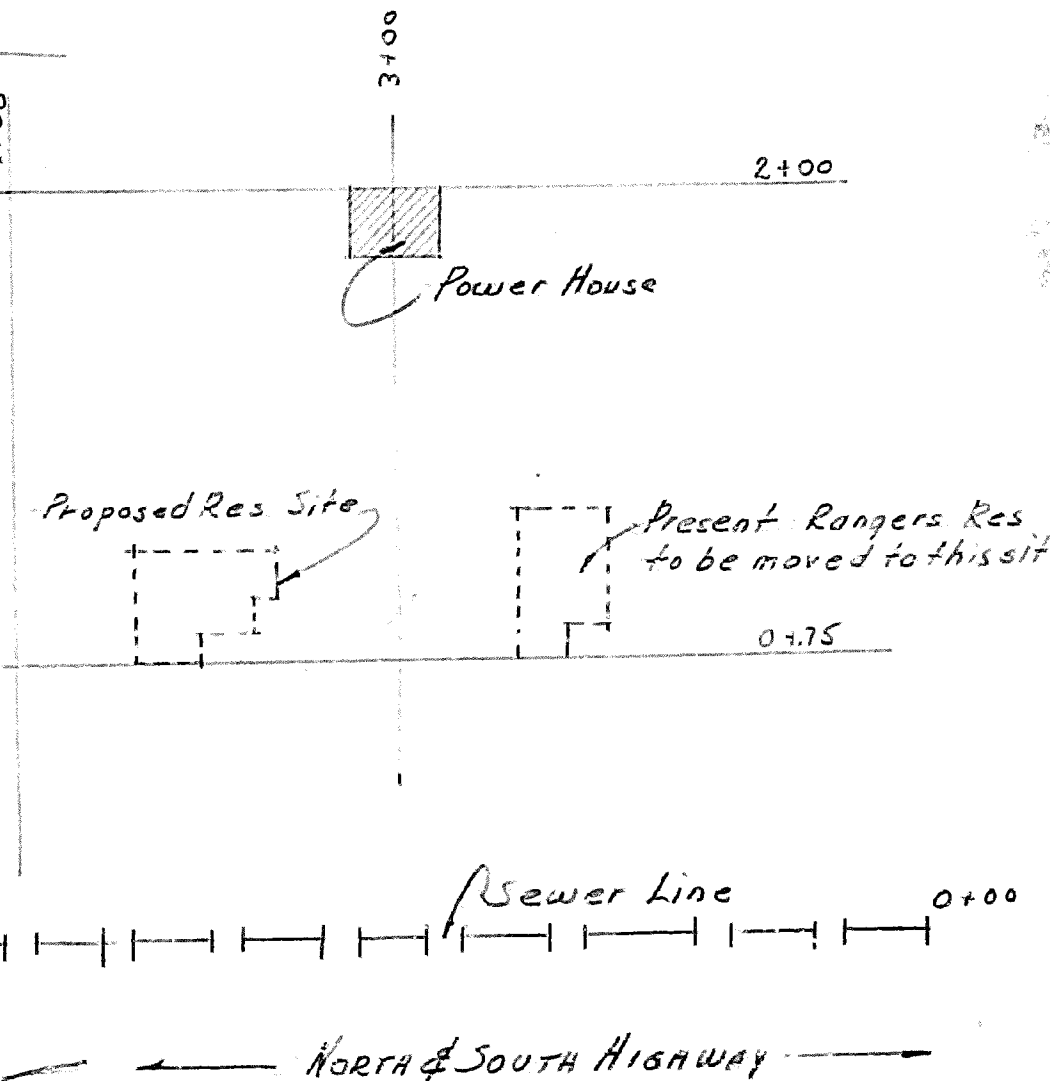


NORTH ELEVATION
Scale 1/4" = 1'-0"



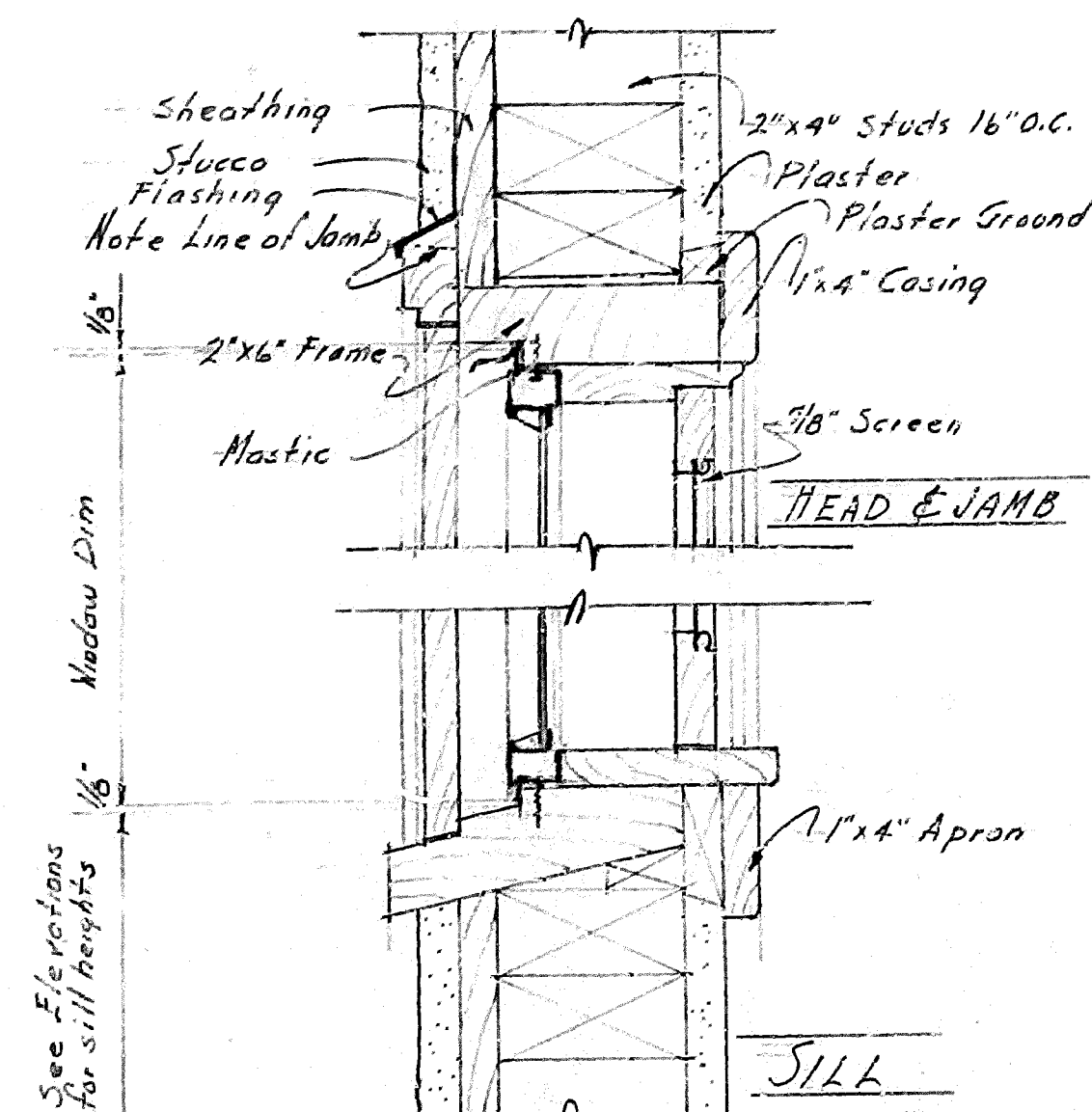
SOUTH ELEVATION

PLOT PLAN
Scale 1" = 50'-0"

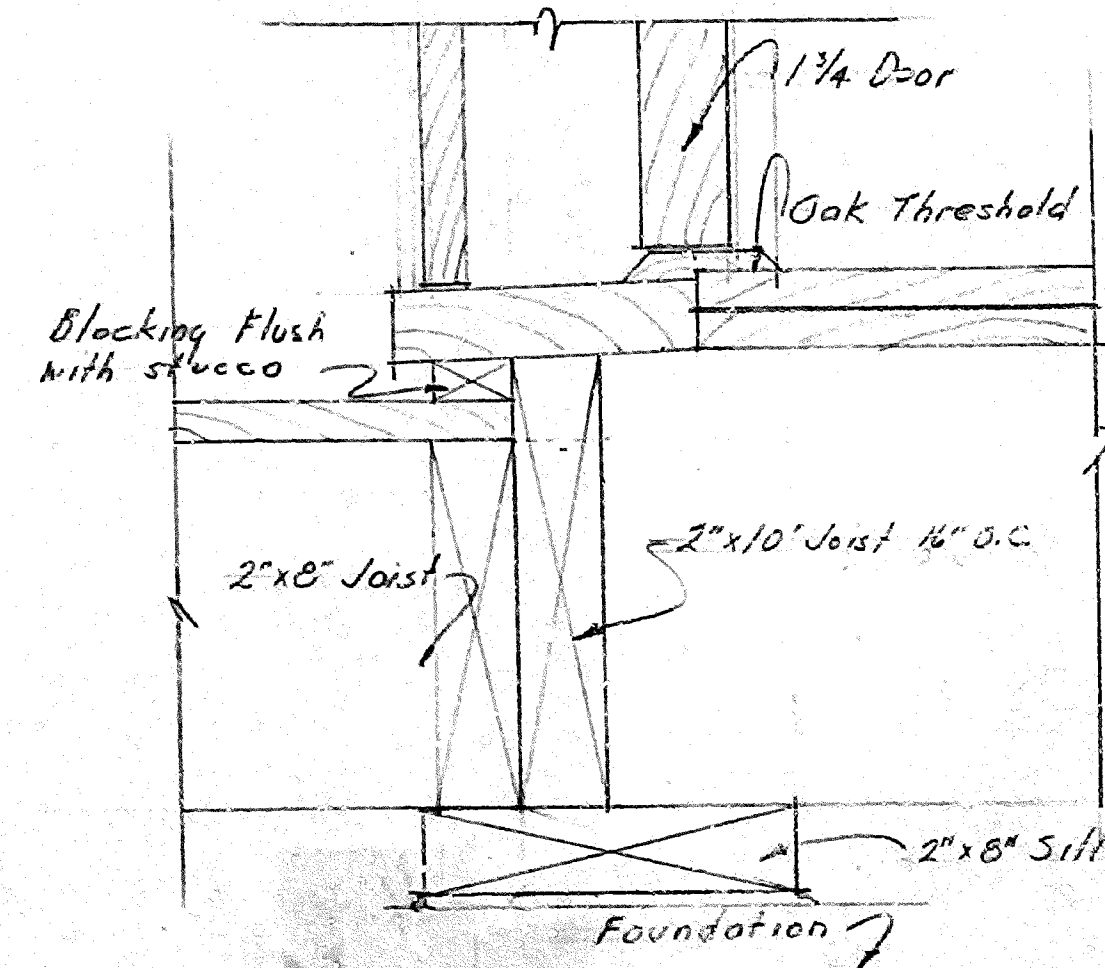
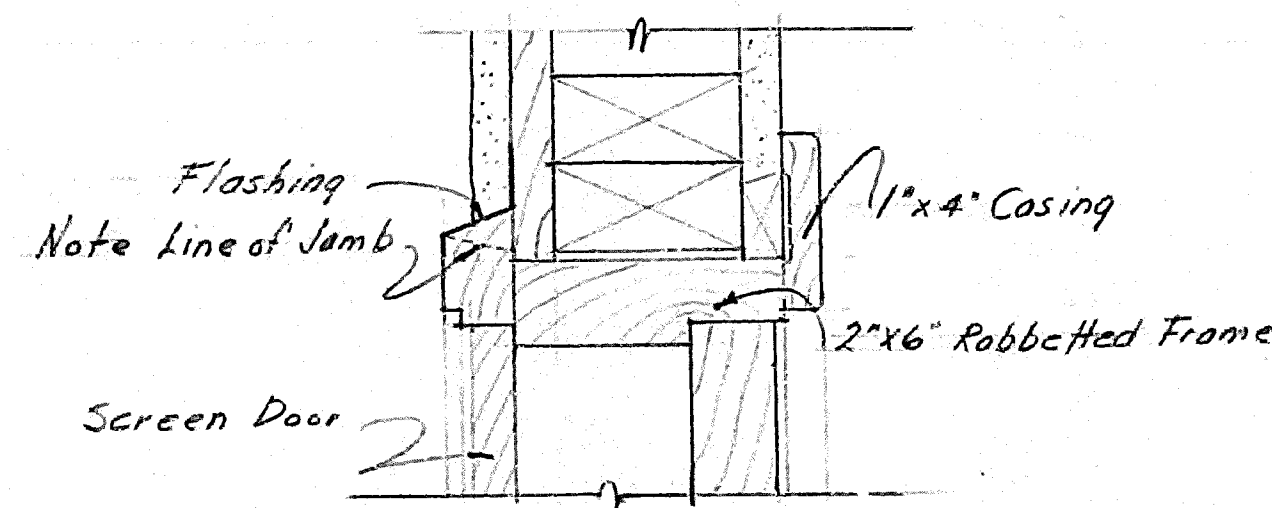


Dr. S. H. W. B. Recommended	Chief Landscape Architect	Date 7/6/31	U.S. DEPARTMENT OF INTERIOR - NATIONAL PARK SERVICE	Date 8-31-31
Ch. By G. H. W. Concurred	Superintendent	Date	WIND CAVE NATIONAL PARK	2 Sheet of 3 sheets
Approved	Director National Park Service	Date	EMPLOYEES RESIDENCE	Job N° WC 1000A
			DESIGNED BY LANDSCAPE DIVISION	

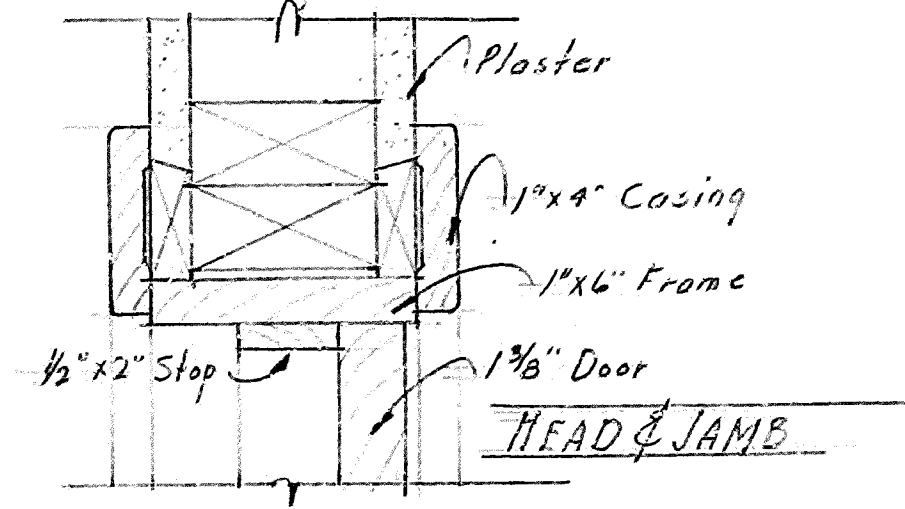
Job completed 2-26-32



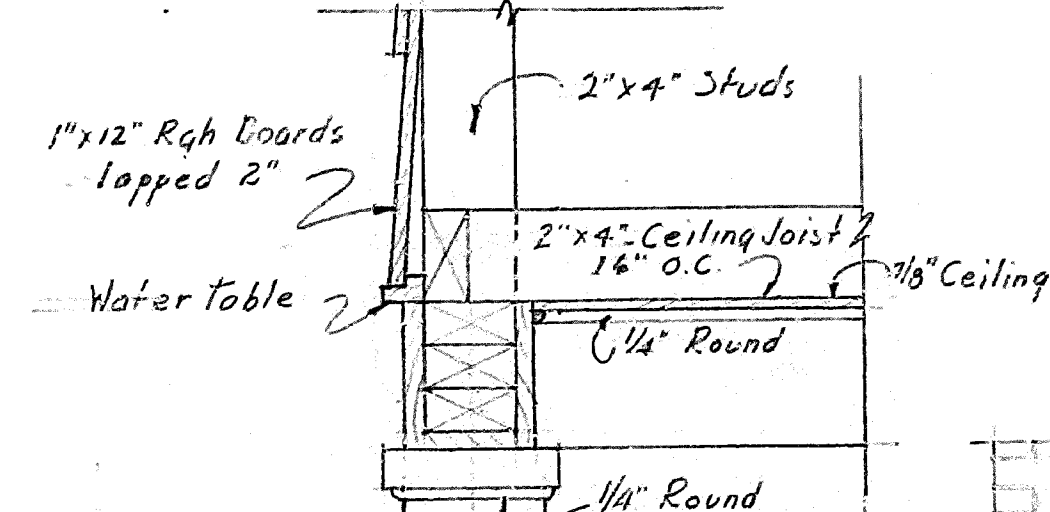
WINDOW DETAIL
Scale 3" = 1'-0"



EXTERIOR DOOR FRAME DET.
Scale 3" = 1'-0"

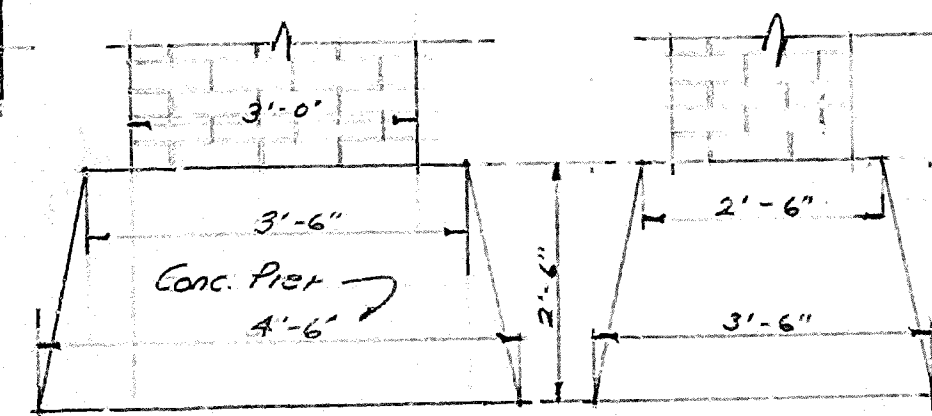
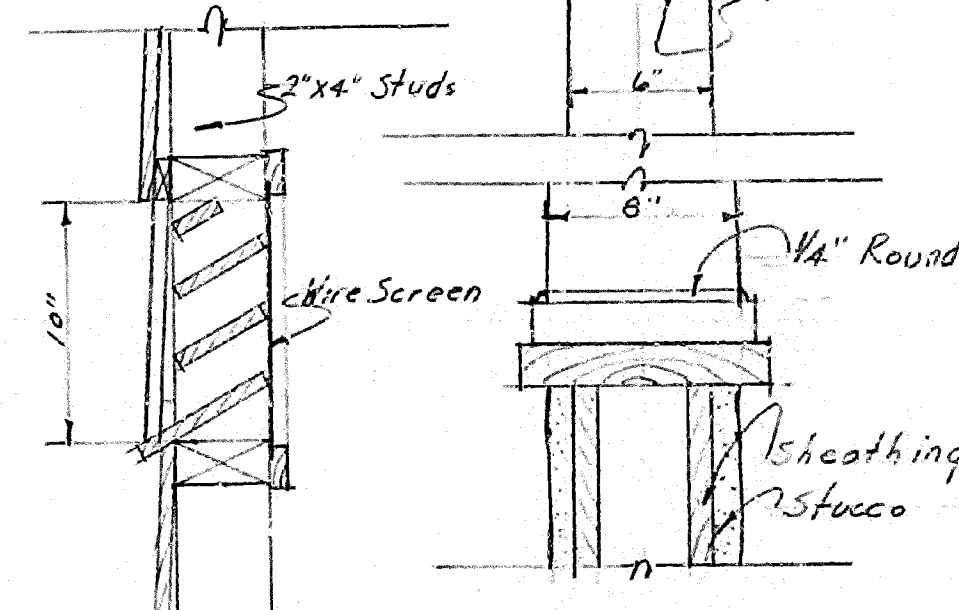


INT. DOOR FRAME DET.
Scale 3" = 1'-0"

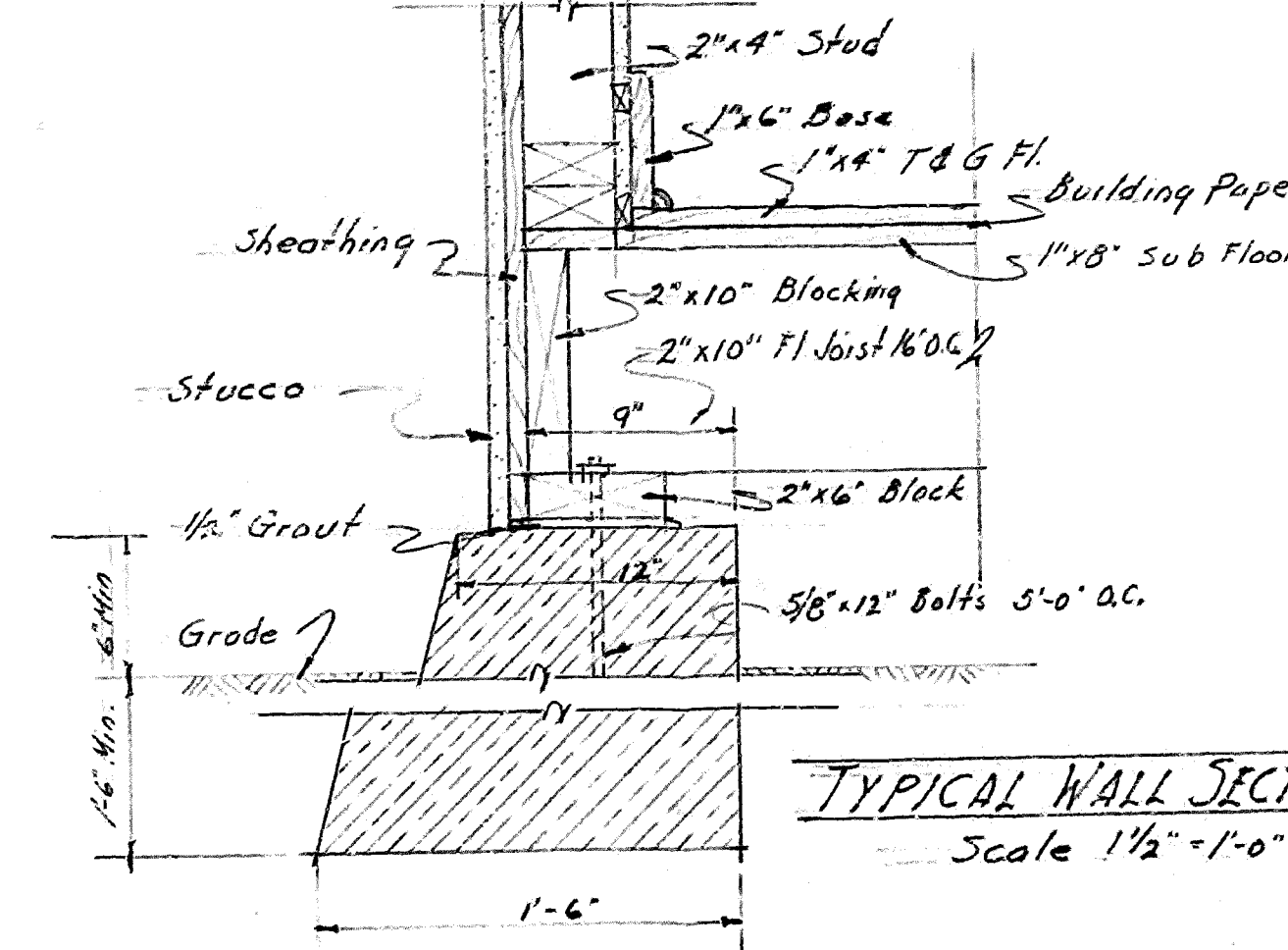


FRONT PORCH DET.
Scale 1 1/2" = 1'-0"

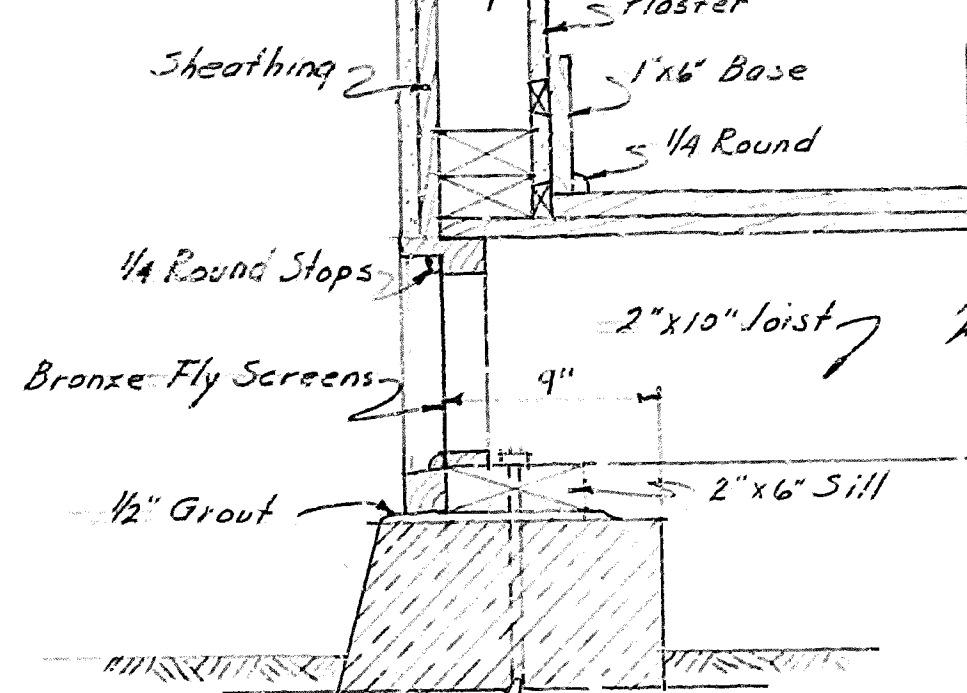
SECTION THRU LOUVER
Scale 1 1/2" = 1'-0"



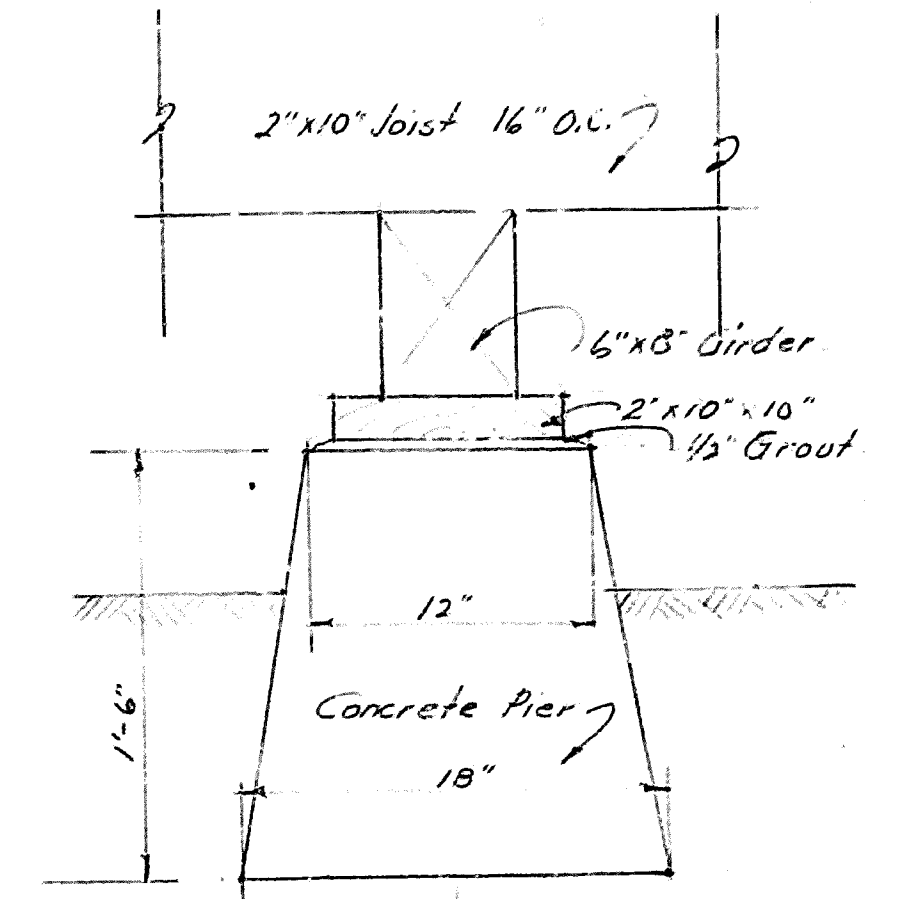
ELEVATION OF CHIMNEY
Scale 1/2" = 1'-0"



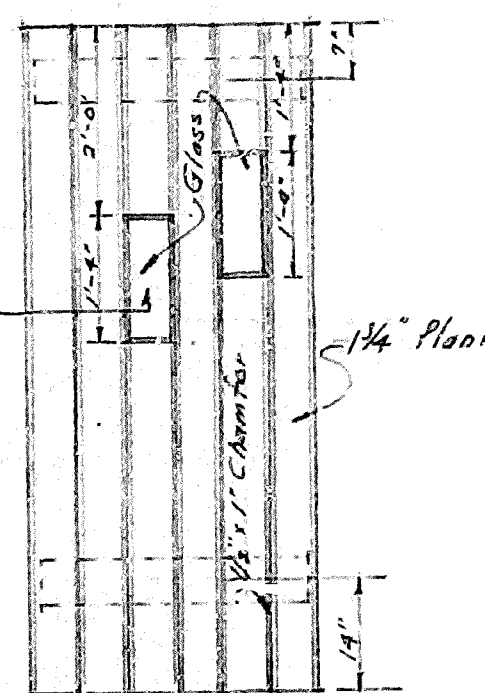
TYPICAL WALL SECTION
Scale 1 1/2" = 1'-0"



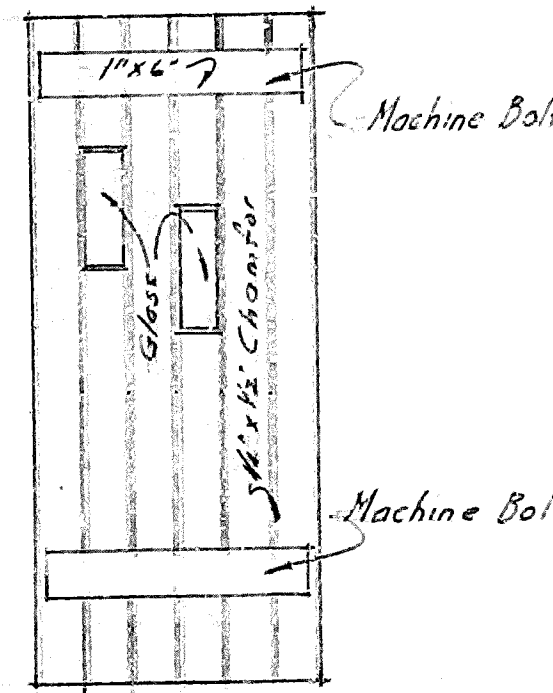
SECTION THRU VENT
Scale 1 1/2" = 1'-0"



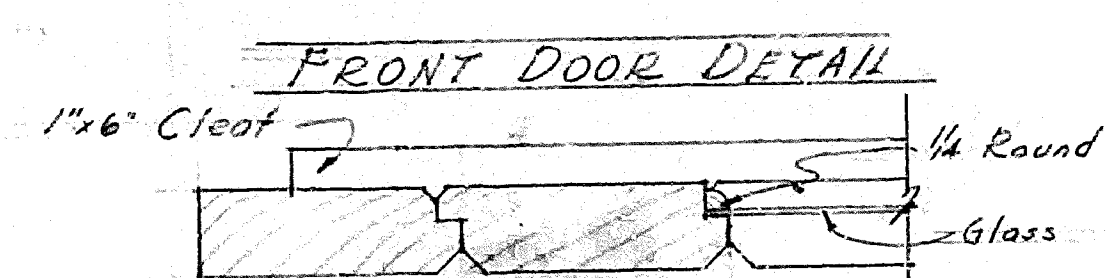
TYPICAL PIER DETAIL
Scale 1 1/2" = 1'-0"



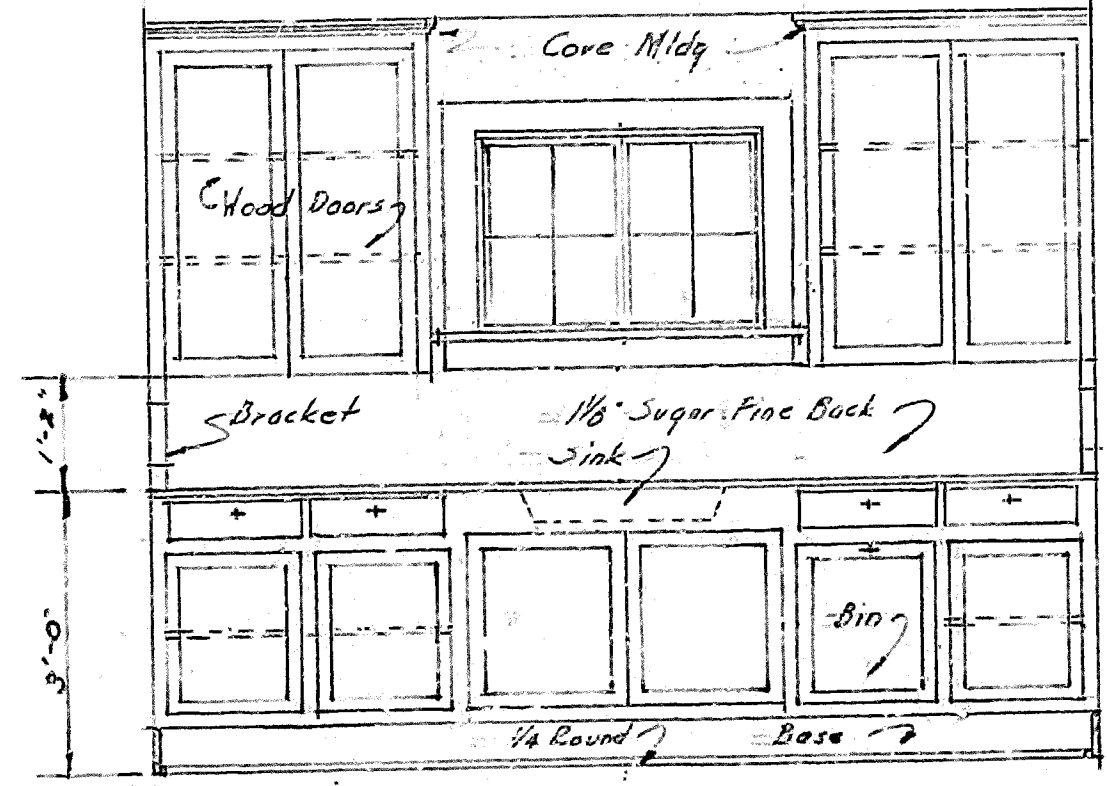
OUTSIDE



INSIDE

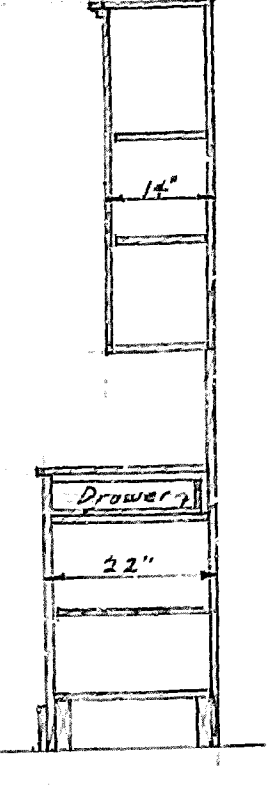


SECTION A-A
Scale 3" = 1'-0"

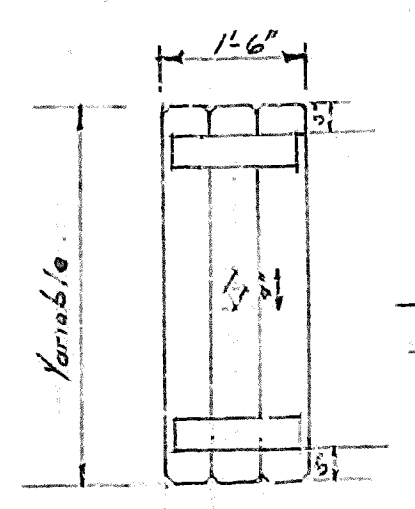


ELEVATION

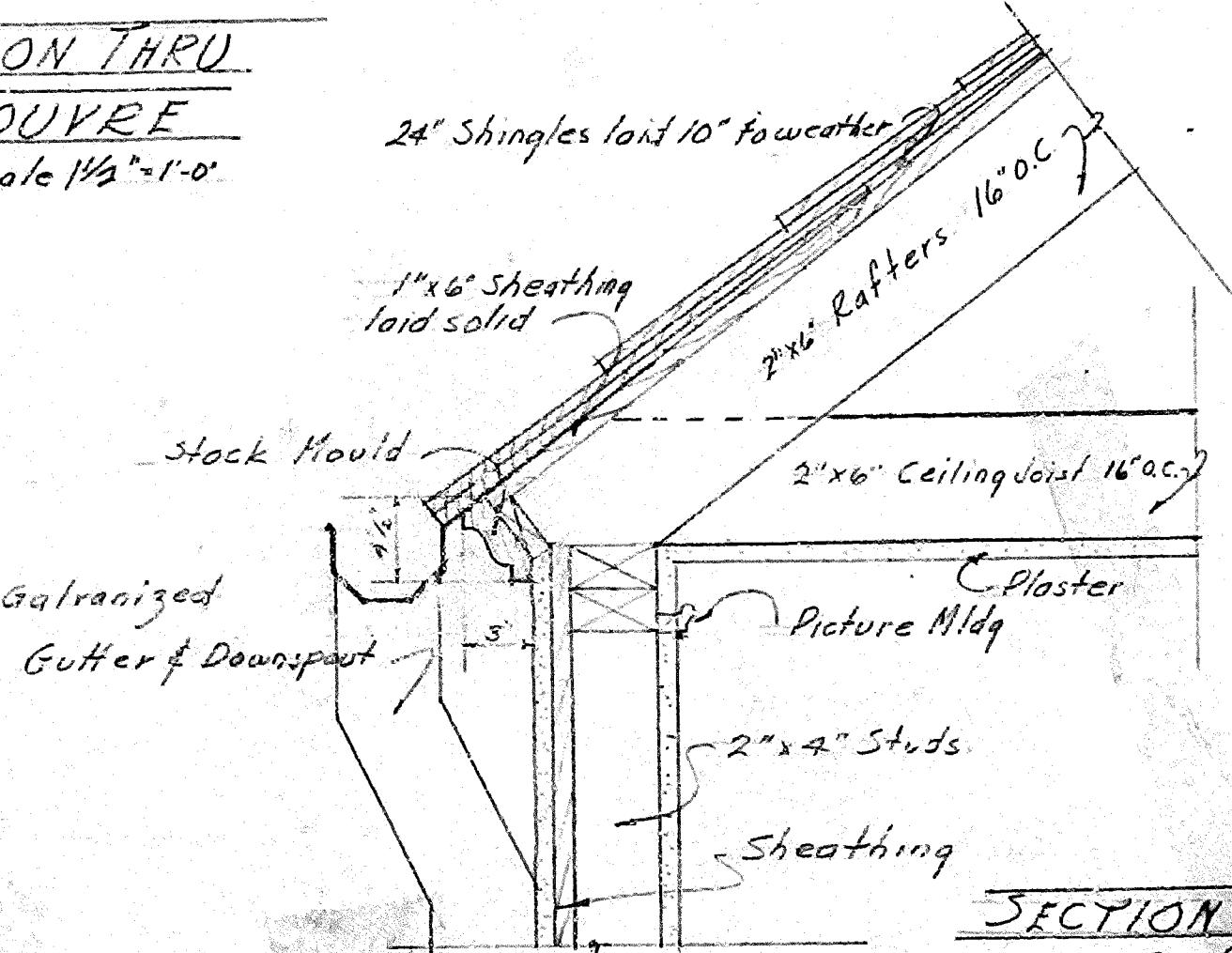
KITCHEN CASE
Scale 1/2" = 1'-0"



SECTION



SHUTTER DETAIL
Scale 1/2" = 1'-0"

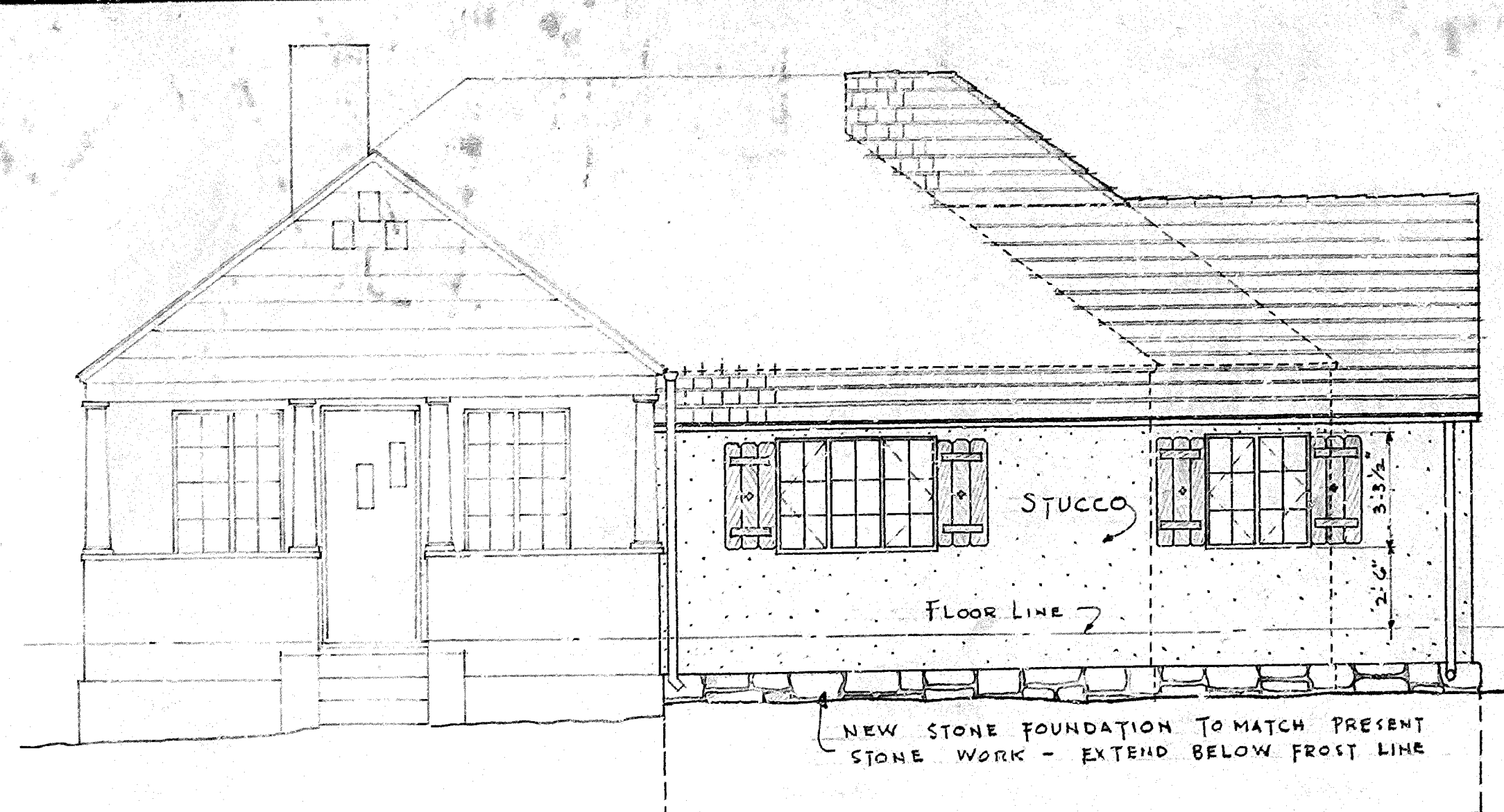


SECTION THRU EAVES
Scale 1 1/2" = 1'-0"

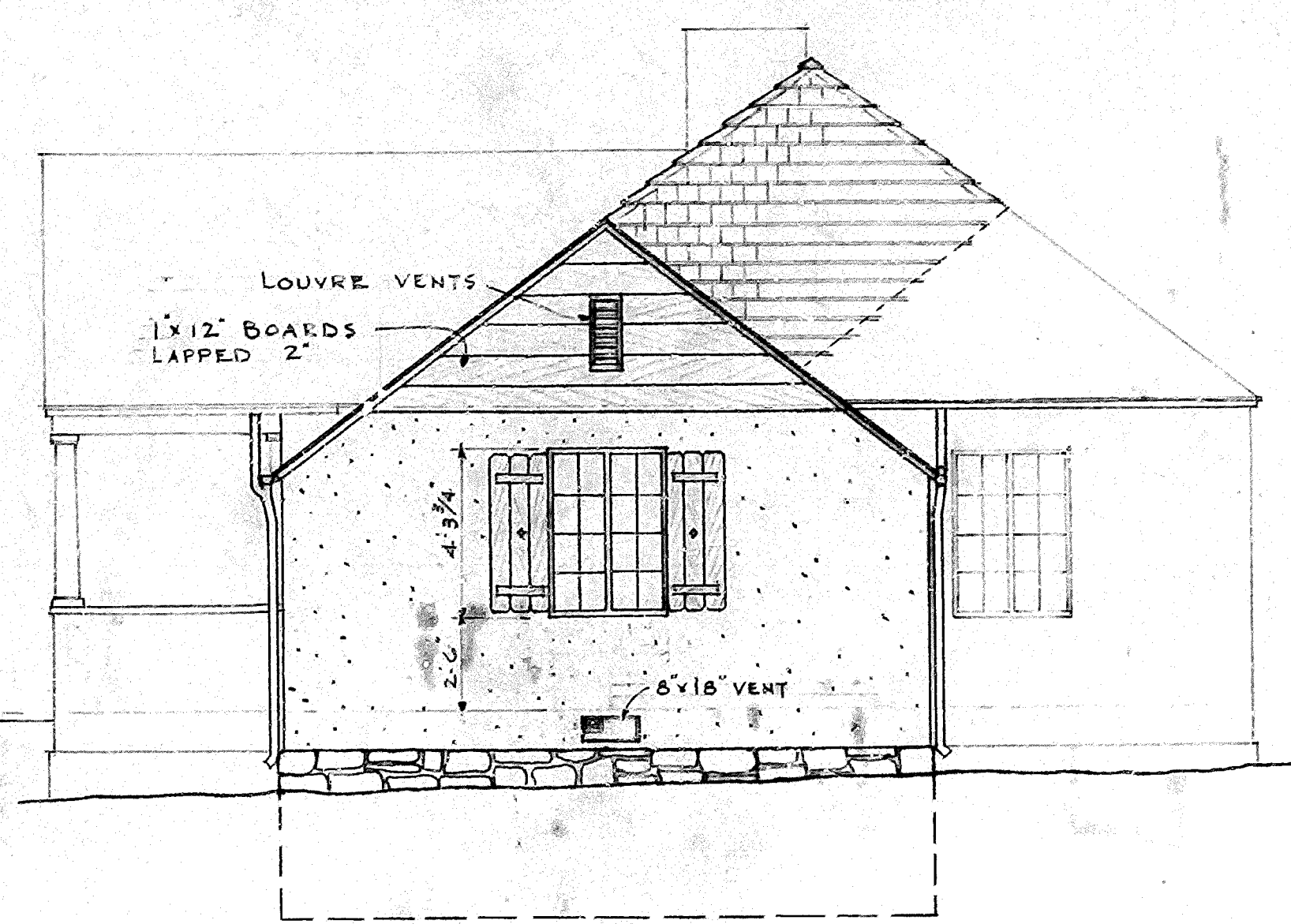
Dr. By H.W.B.	Recommended	Chief Landscape Architect	Date 7/1/31	U.S. DEPARTMENT OF INTERIOR - NATIONAL PARK SERVICE	Date 8-31-31
Ch. By G.H.W.	Concurred	Superintendent	Date	WIND CAVE, NATIONAL PARK	3rd Sheet of 3 Sheets
	Approved	Director National Park Service	Date	EMPLOYEES RESIDENCE	Job No. WIC.1000-A
				DESIGNED BY LANDSCAPE DIVISION	

Job completed 2/26/32

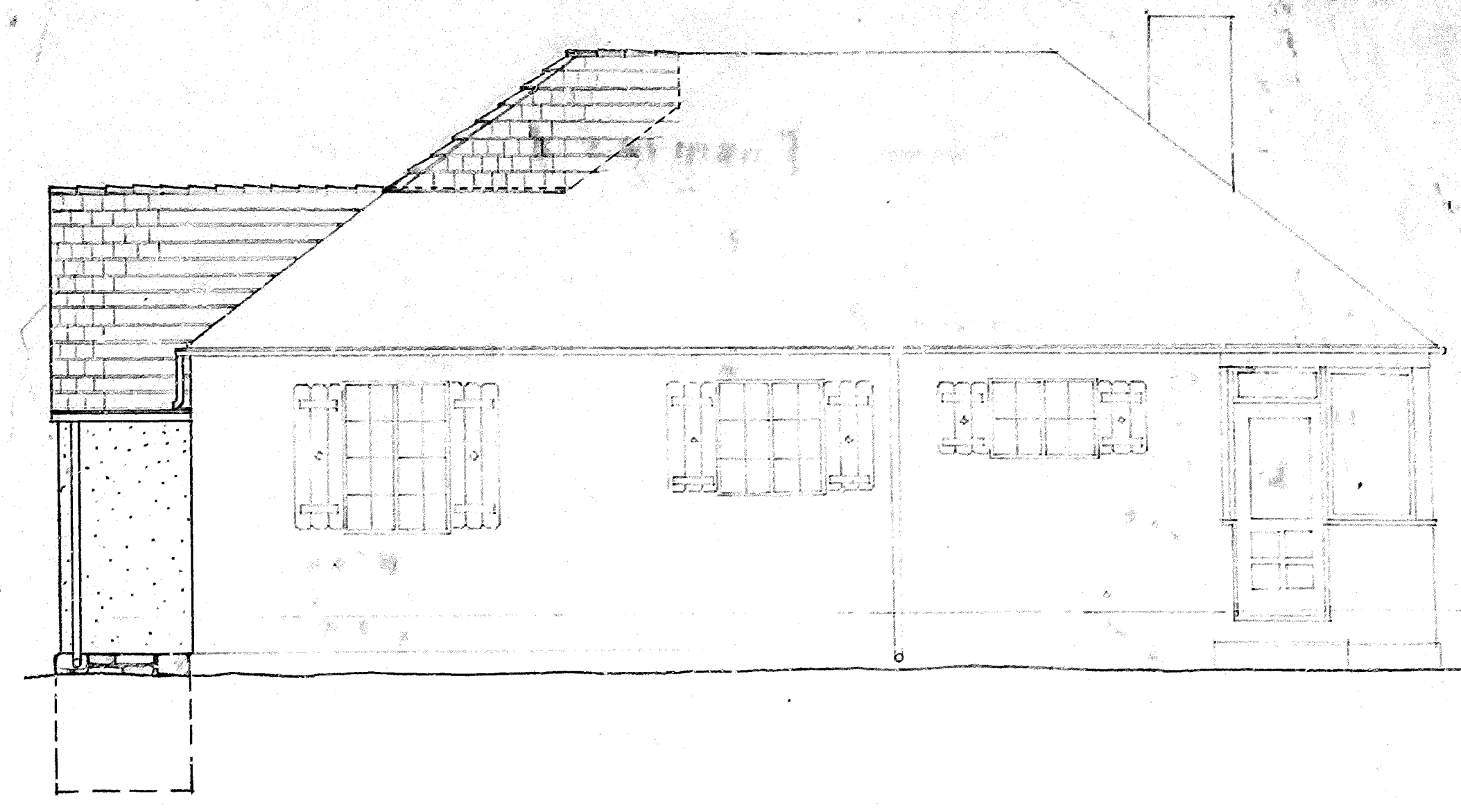
100-2516-100

DESIGNED BY
E. E. WILKIN

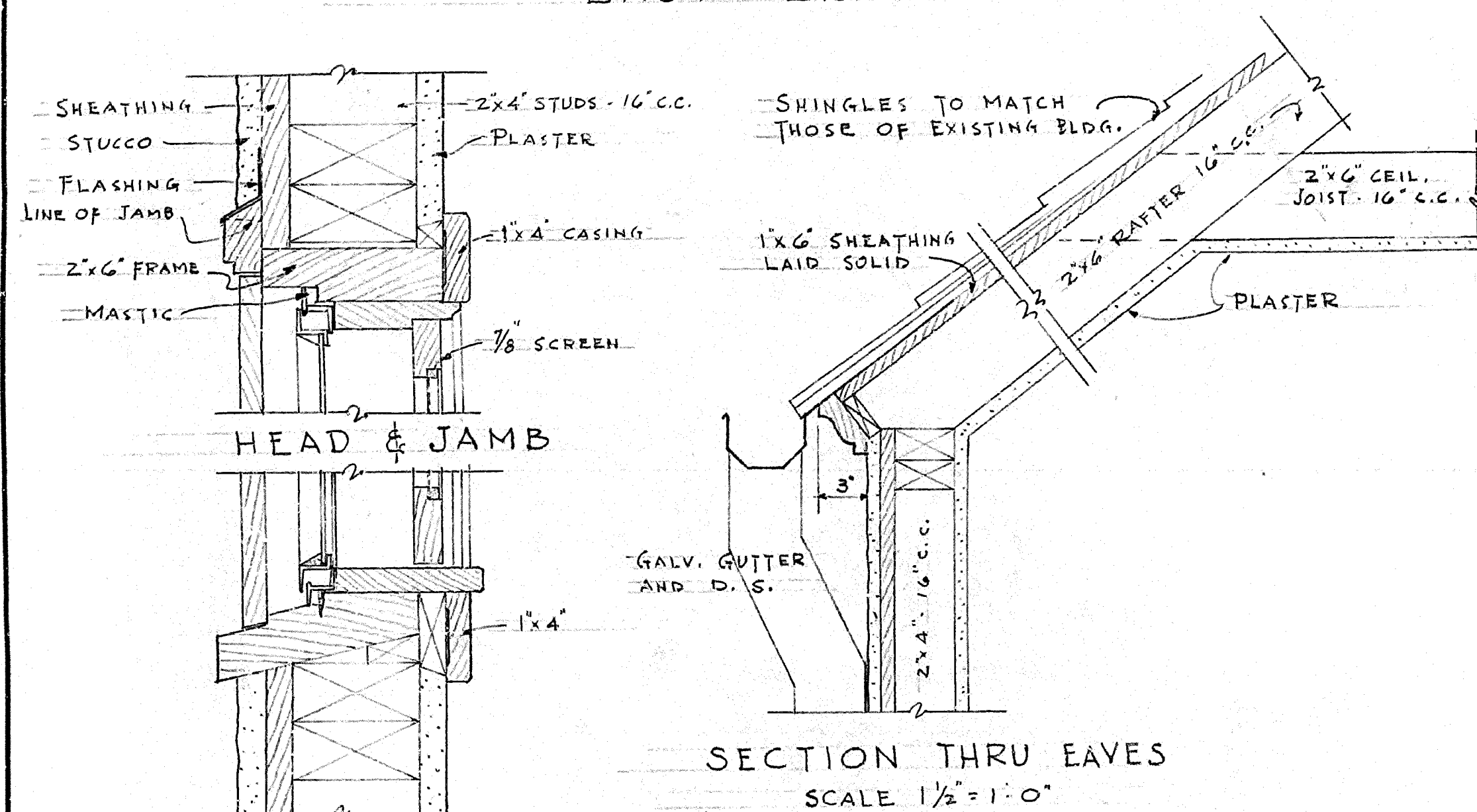
EAST ELEVATION



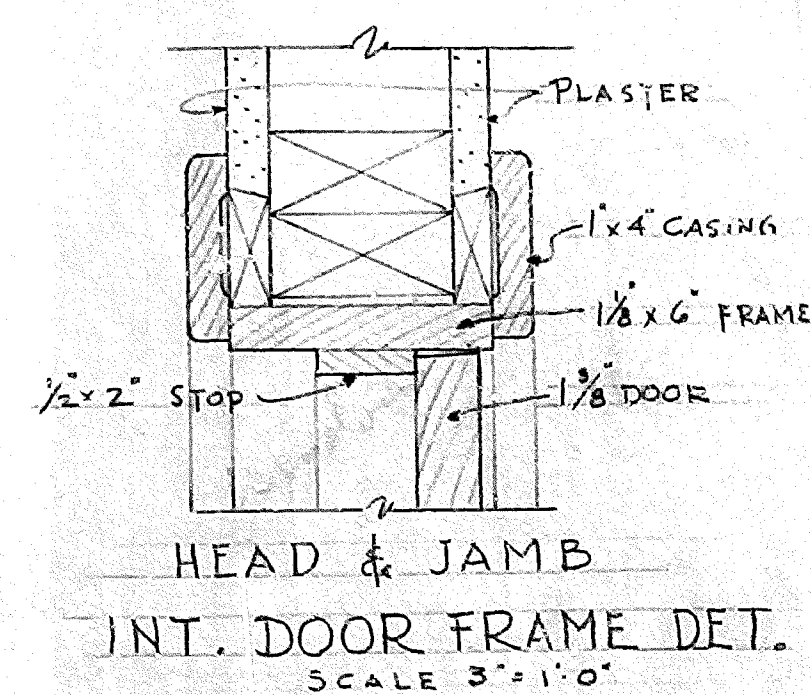
NORTH ELEVATION
SCALE $\frac{1}{4}" = 1'-0"$



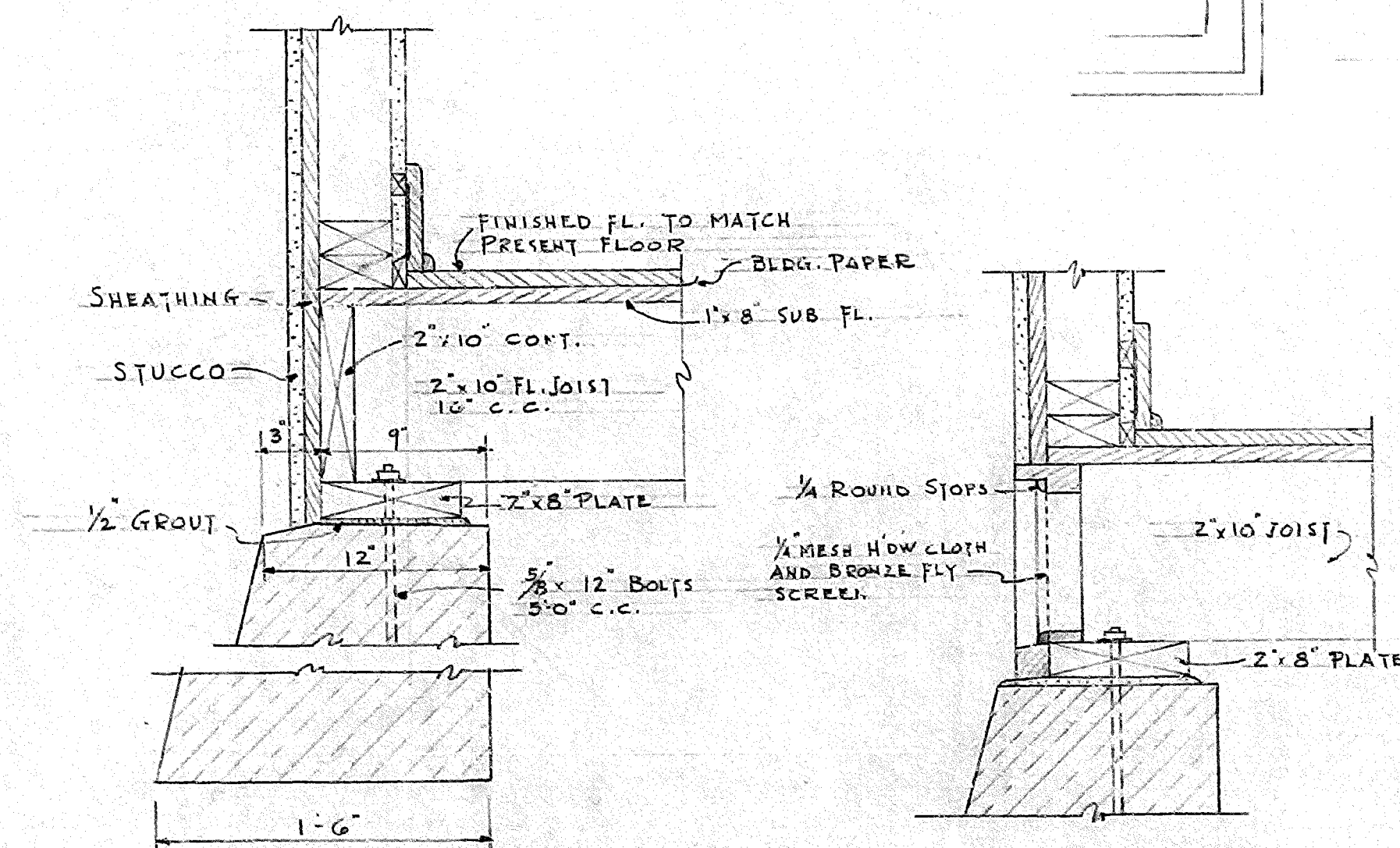
WEST ELEVATION



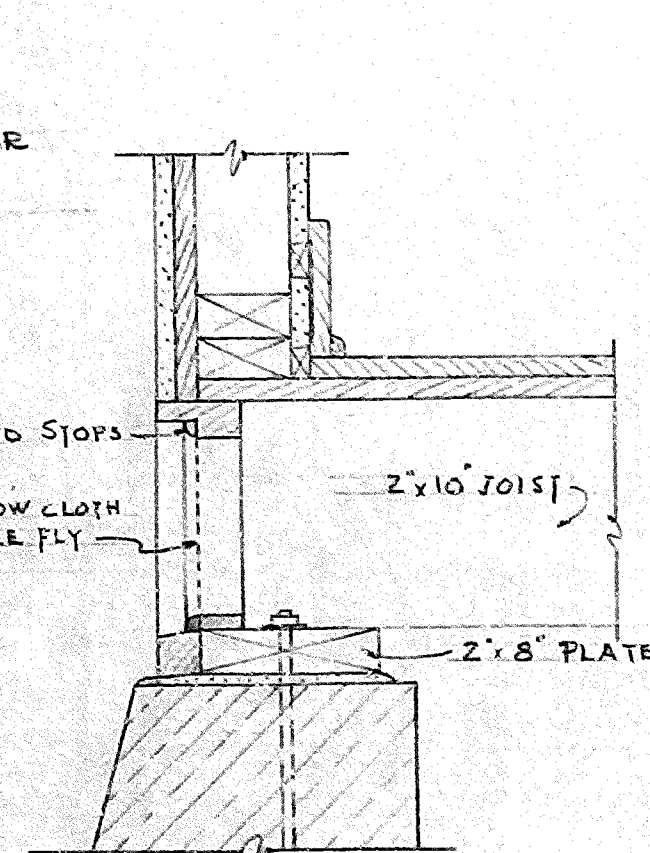
• SILL •
WINDOW DETAIL
SCALE 3"=1'-0"



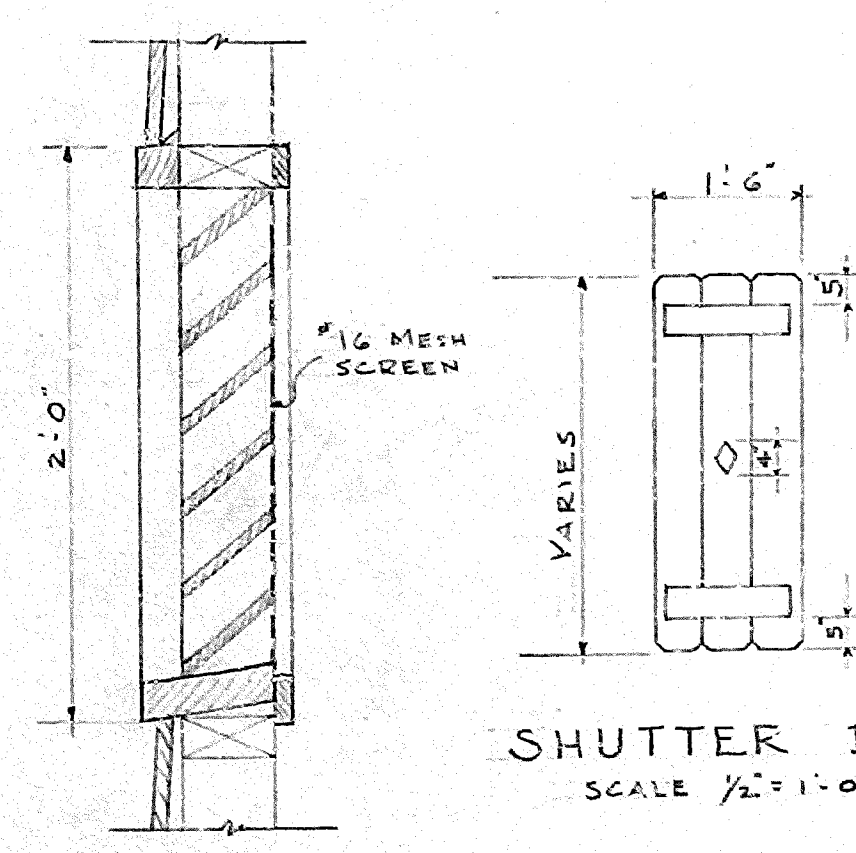
HEAD & JAMB
INT. DOOR FRAME DET.
SCALE 3" = 1'-0"



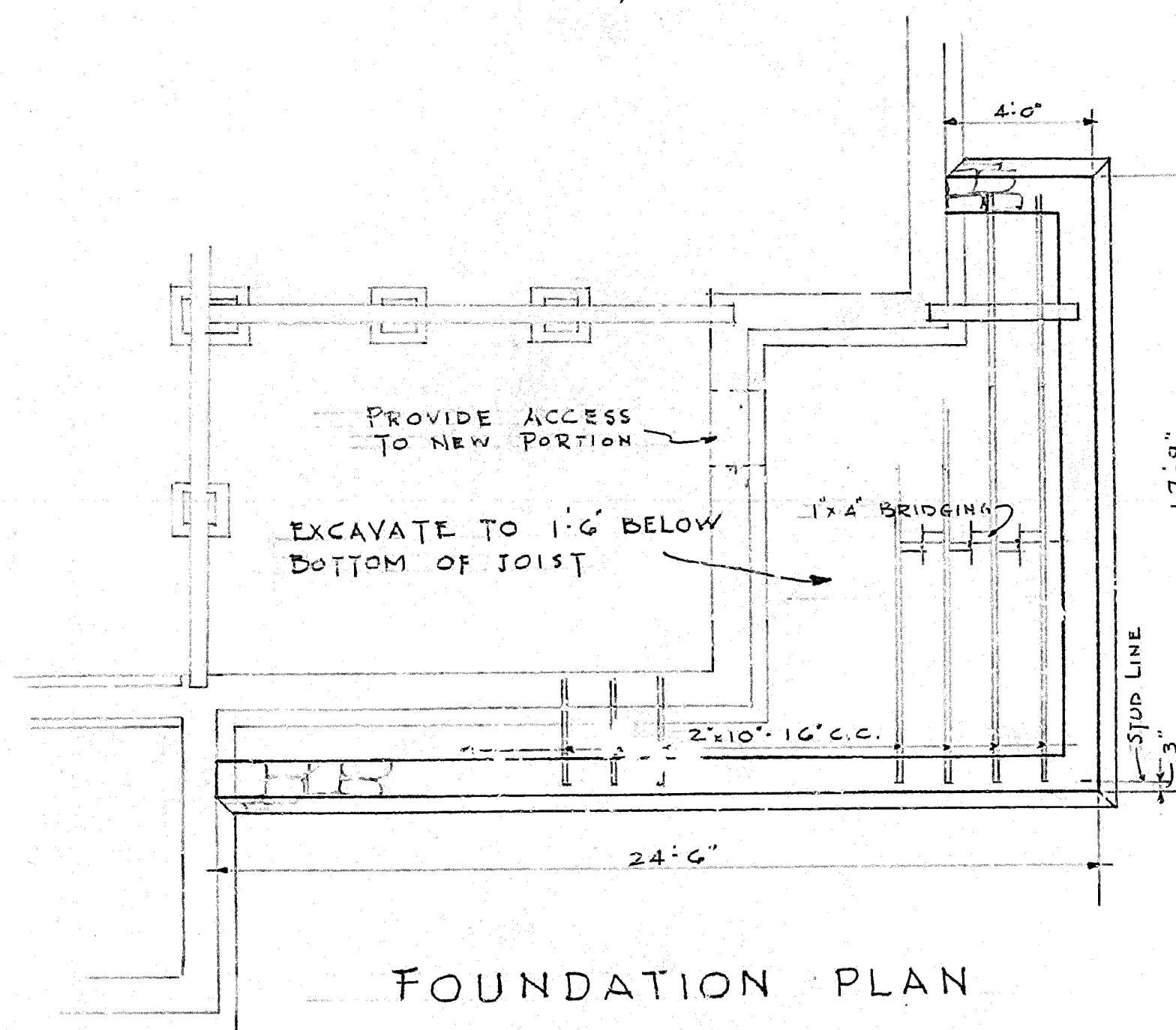
TYPICAL WALL SECTION
SCALE 1 1/2" = 1'-0"



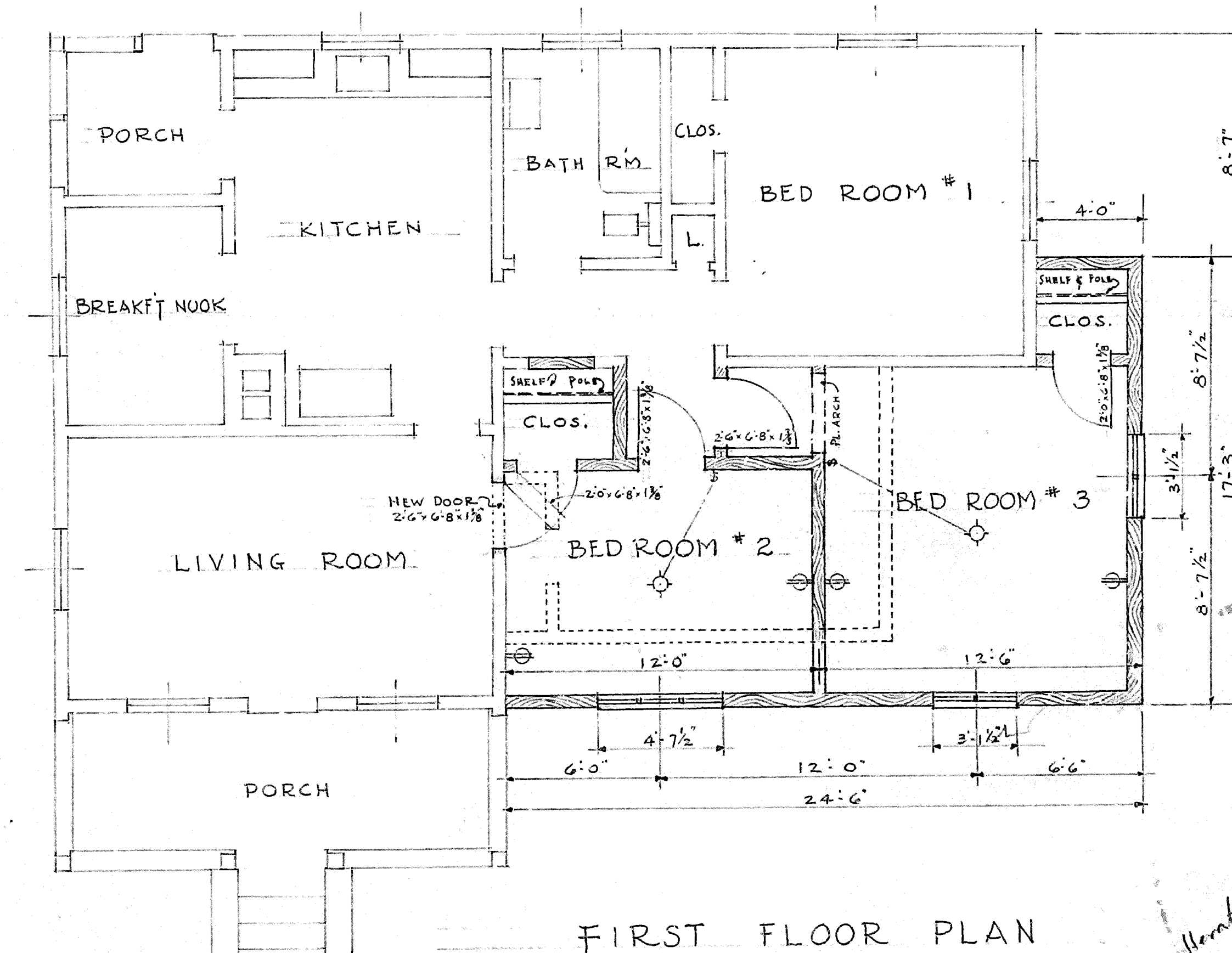
SECTION THRU VENT
SCALE 1 1/2" = 1'-0"



SHUTTER DETAIL
SCALE 1/2" = 1'-0"



FOUNDATION PLAN



FIRST FLOOR PLAN
SCALE $\frac{1}{4}'' = 1'-0''$

NOTE :
ALL NEW WORK TO BE SIMILAR TO THAT
OF EXISTING WORK.

LEGEND

	EXISTING -
	TO BE REMOVED
	NEW WORK

Quarters No. 7

SCALE AS NOTED

RECOMMENDED W. J. Lusk DATE 12-12-53
Acting REGIONAL LANDSCAPE ARCHITECT

CONCURRED Harry J. Lusk DATE 12-9-53
SUPERINTENDENT

APPROVED J. J. Carr DATE 12-14-53
REGIONAL DIRECTOR

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
BRANCH OF PLANS & DESIGN
REGIONAL OFFICE II
OFFICE

ADDITION TO EMPLOYEES RESIDENCE (No. 1)

NAME OF JOB
TIE-2-A AREA
LOCATION
WIND CAVE NATIONAL PARK
LOCATION OF PARK

REGION	III
SHEET 1 OF 1	
DRAWING NO.	NP-WC 1000-C

BASIC DATA DRAWINGS No. WC-1000 A - OF ORIGINAL BLDG



HS-07 ca. 1969. (WICA Museum Collection #WICA 6706)

Appendix B Historic Photographs

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

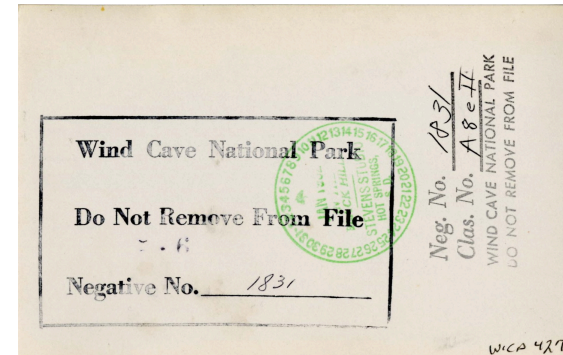
Primary HS# HS-07
Topic
HS-07

Photo Date ca. 1932, Jan 4.
Date Source Stamp on Photo
Photographer Yes

Manufact. Date 1/1/1932

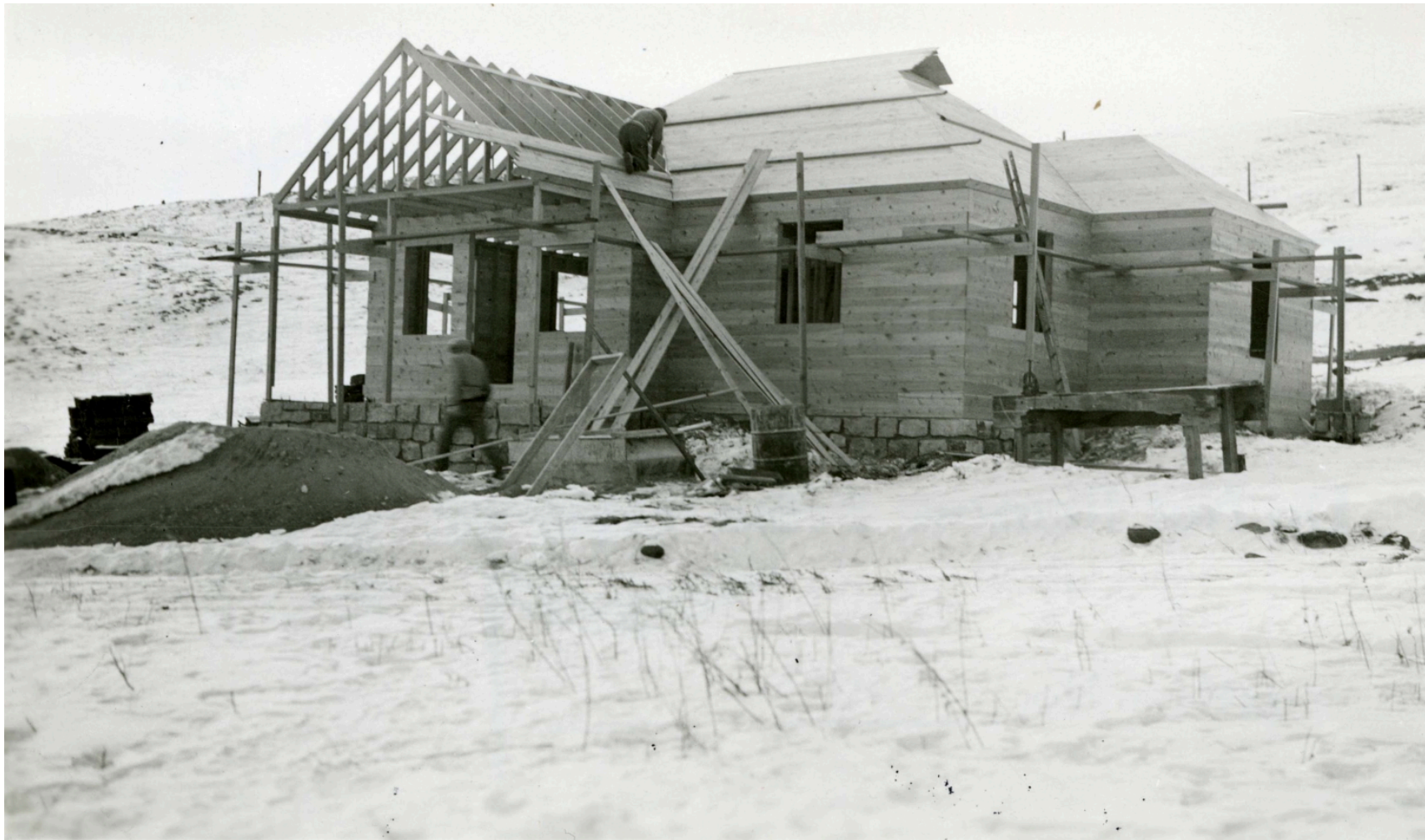
Catalog #
WICA
4271

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Year on date stamp is not legible, but plans say this was completed in 1932.



Park Database Description

Photographic Print and Negative of Buildings - Construction of 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*

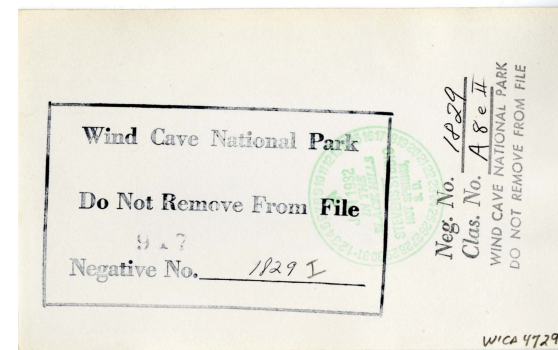
Primary HS# HS-07
Topic
HS-07

Photo Date ca. 1932, Jan 8.
Date Source Stamp on Photo, Manf. date
Photographer Stevens Studio

Manufact. Date 1/1/1932

Catalog #
WICA
4729

Below: Front of Image. Right: Back of Image



HSR 2015 Notes
*Month not clear
on date stamp.*



Park Database Description

Photographic Print and Negative of Buildings Construction of Residence #7. See Also 1824, 3555. 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*

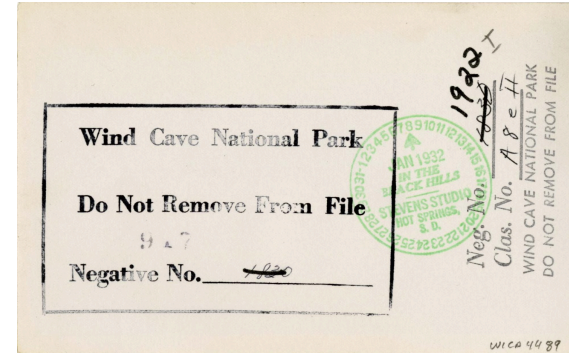
Primary HS# HS-07
Topic
HS-07

Photo Date 1932, Jan. 8
Date Source Stamp on Photo
Photographer Stevens Studio

Manufact. Date 3/1/1933

Catalog #
WICA
4489

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



Park Database Description

Photographic Print and Negative of Buildings - Distant View of Residences 7 and 8. (Orig. 1922). 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*

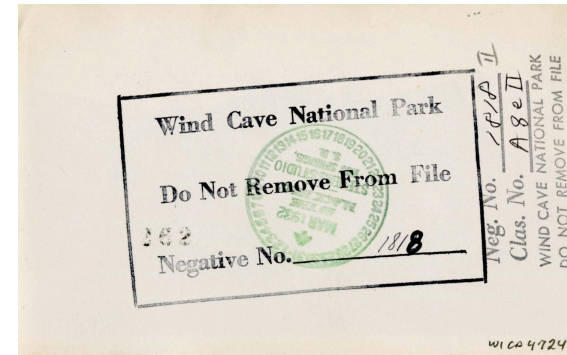
Primary HS# HS-07
Topic
HS-07

Photo Date 1932, Mar. 1
Date Source Stamp on Photo
Photographer Stevens Studio

Manufact. Date 3/1/1932

Catalog #
WICA
4724

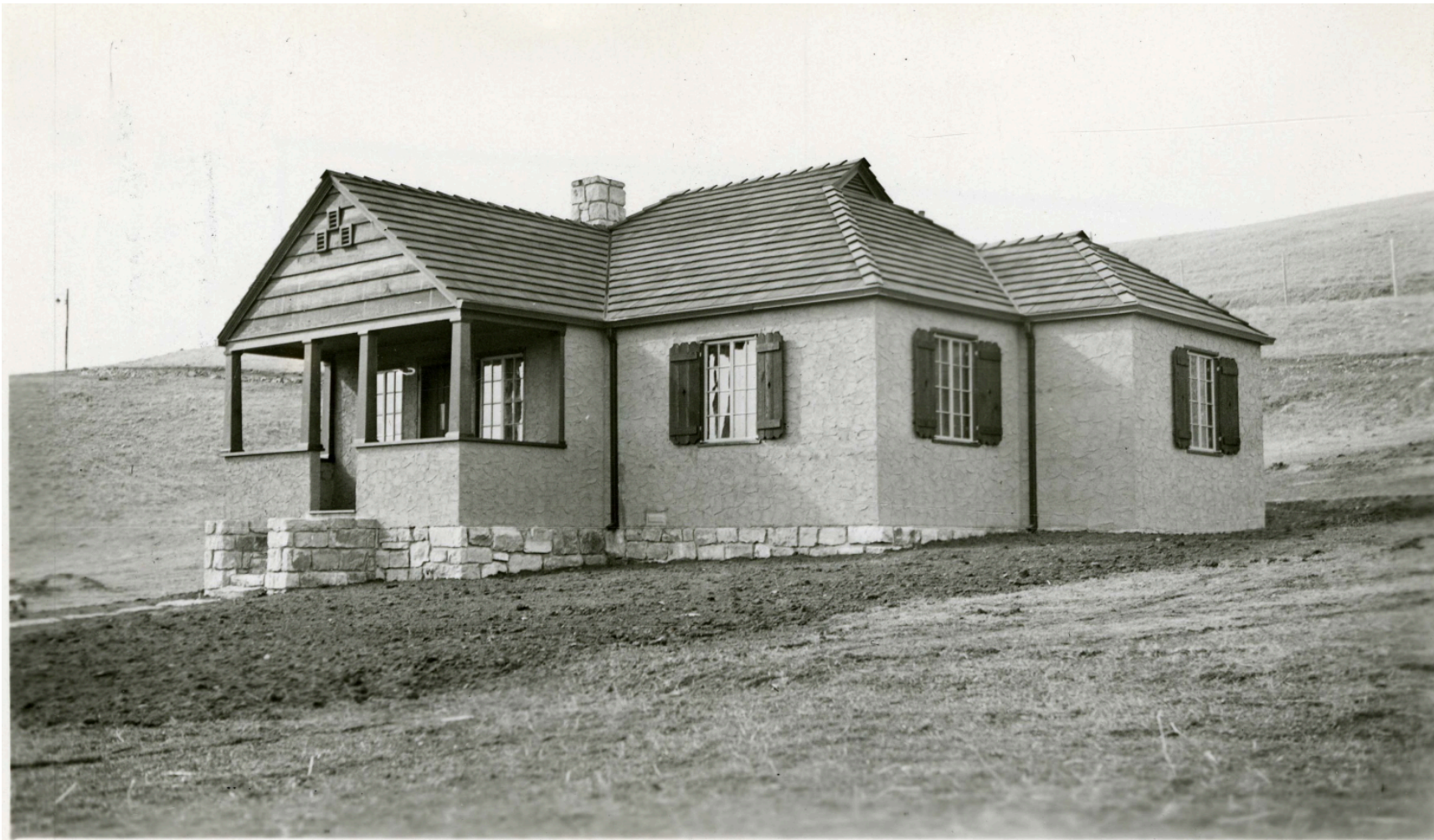
Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Park Database Description

Photographic Print and Negative of Buildings - Residence #7. See Also 1818, 3547. 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*

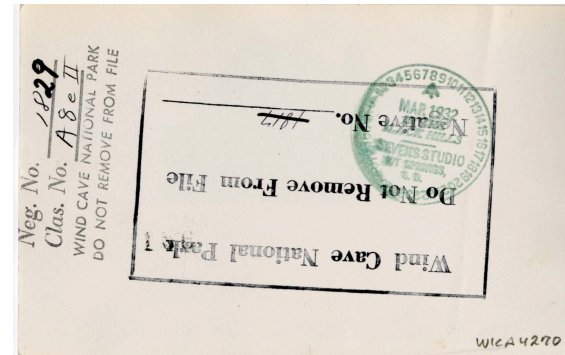
Primary HS# HS-07
Topic
HS-07

Photo Date 1932, March 8.
Date Source Stamp on Photo
Photographer Stevens Studio

Manufact. Date 1/1/1932

Catalog #
WICA
4270

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



Park Database Description

Photographic Print and Negative of Buildings - Construction of Residence #7. See Also 3554, 3555. 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*

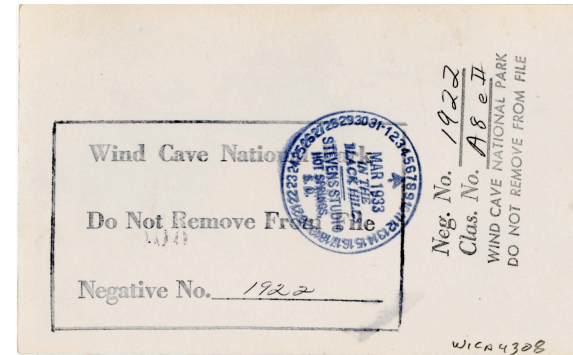
Primary HS# HS-07
Topic HS-08
HS-07

Photo Date 1933, Mar. 7
Date Source Stamp on Photo
Photographer Stevens Studio

Manufact. Date 3/1/1933

Catalog #
WICA
4308

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



Park Database Description

Photographic Print and Negative of Buildings - Distant View of Residences 7 and 8. See Also 2301. 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#	<i>HS-07</i>	Photo Date	<i>ca. 1937</i>	HSR 2015 Notes
Topic		<i>HS-11</i>	Date Source	<i>other, see HSR notes</i>	<i>CCC Tree</i>
<i>General</i>			Photographer		<i>Planting</i>
<i>HS-07</i>					
<i>HS-11</i>					
Catalog #			Manufact. Date		
<i>WICA</i>					
<i>4208</i>					
			<i>Below: Front of Image. Right: Back of Image</i>		



Park Database Description
Photographic
Negative of
Landscaping - Tree
Moving. See Also
3496, 3497. 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*

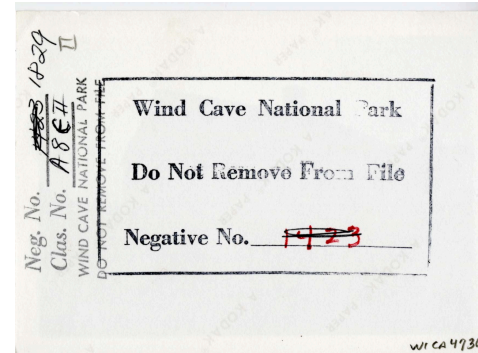
Primary HS# HS-07
Topic
HS-07

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

Manufact. Date 1/1/1932

Below: Front of Image. Right: Back of Image

Catalog #
WICA
4730



HSR 2015 Notes

Note screened porch on back wall. The hole in the foundation wall is a location for a new bulkhead door, which was added with a new basement in the mid 1930s.

Park Database Description

Photographic Print and Negative of Buildings - Construction of Residence #7. See Also 1829, 3554. 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*

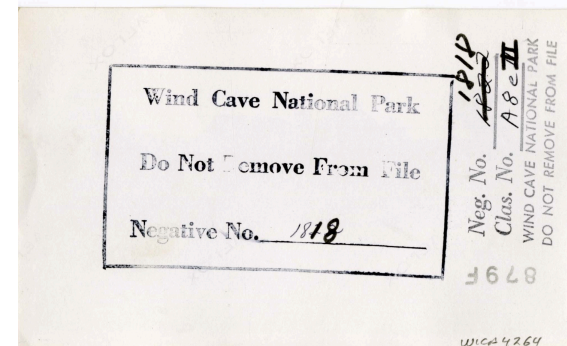
Primary HS# HS-07
Topic
HS-07

Photo Date ca. 1940s
Date Source other, see HSR notes
Photographer

Manufact. Date 3/1/1932

Catalog #
WICA
4264

Below: Front of Image. Right: Back of Image



HSR 2015 Notes

Manufactured date says 1932, but larger trees and shrubs indicate a later photo date. This was taken before the windows were replaced in the early 1950s.

Park Database Description

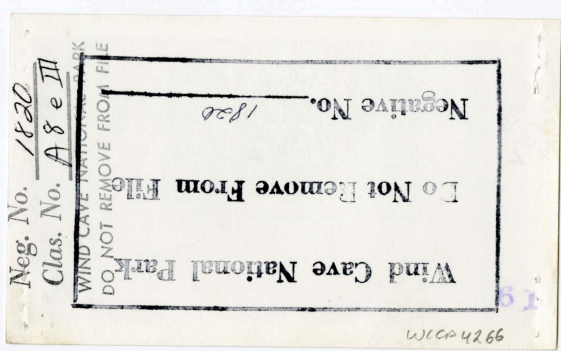
Photographic Print and Negative of Buildings - Residence #7. See Also 3547, 3548. Photographic Print Is Stored at Wind Cave National Park, and the Nitrate Negative Is in Cold Storage at the Midwest Archeological Center.



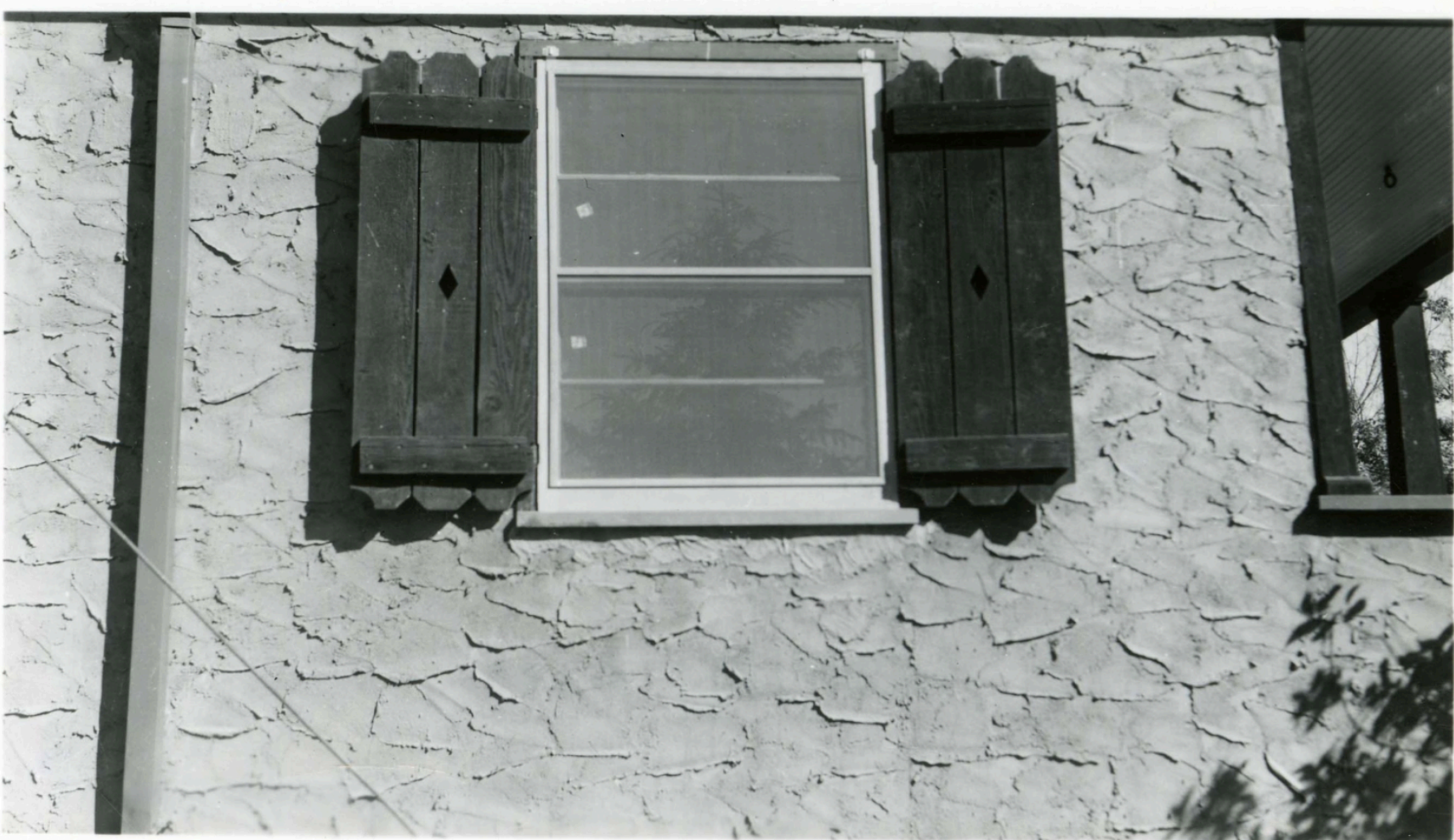
Appendix B: Wind Cave Park-Selected Database and Photo Files *Italicized text added by Deb Sheals in 2015*

Primary HS# HS-07
Topic
HS-07
Photo Date 1952
Date Source "Manufactured Date"
Photographer

Catalog #
WICA
4266
Manufact. Date 1952
Below: Front of Image. Right: Back of Image



HSR 2015 Notes
*South window,
near front porch.*



Park Database Description
Photographic Print and Negative of insulation of Residential Building - New Check-Rail Sash Windows With Screen installed in 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*

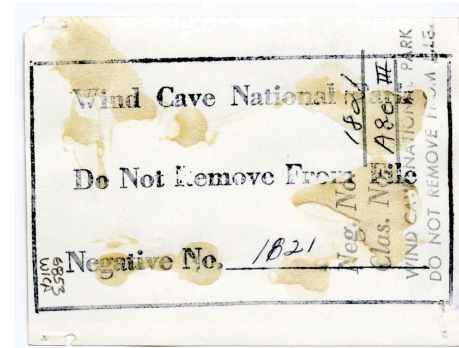
Primary HS# HS-07
Topic
HS-07

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

Manufact. Date 1952 (?)

Below: Front of Image. Right: Back of Image

Catalog #
WICA
6853



HSR 2015 Notes

South side of the house, near the front porch.



Park Database Description

Photographic Print and Negative of Building #7 - Residence - Outside Entrance into Basement. Rose Asberg in Picture.

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

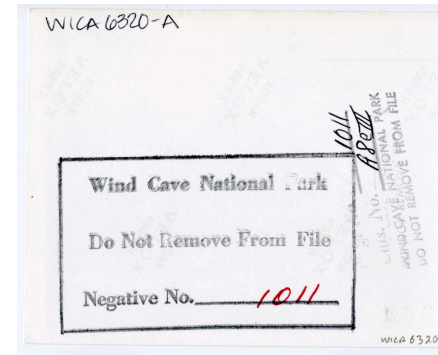
Primary HS# HS-07
Topic
HS-07

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

Manufact. Date 11/1/1959

Catalog #
WICA
6320

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



Park Database Description

Photographic Print and Negative of Building - Residence
7. Housing Area.

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

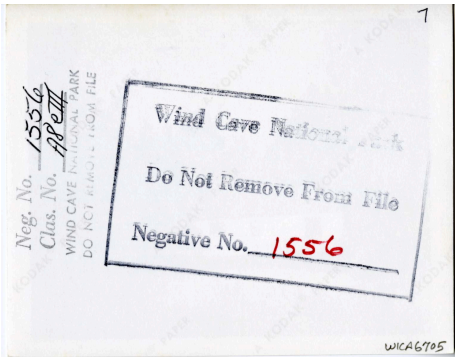
Primary *HS#* HS-07
Topic
HS-07

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

Manufact. Date WINTER1969

Catalog #
WICA
6705

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



Park Database Description

Photographic Print and Negative of Buildings - Residence #7.

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

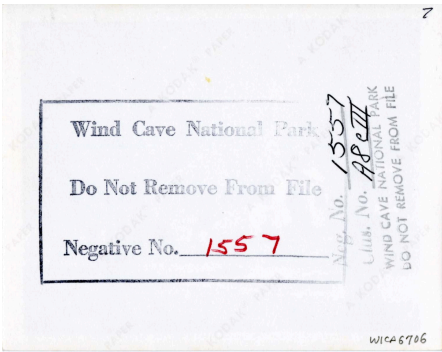
Primary *HS#* HS-07
Topic
HS-07

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

Manufact. Date WINTER1969

Catalog #
WICA
6706

Below: Front of Image. Right: Back of Image



HSR 2015 Notes



**Park Database
Description**

Photographic Print
and Negative of
Building - Residence
#7.



HS-07 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-07 Quarters				
01 00 00 GENERAL CONDITIONS	15%	7,384	-	4,964
02 41 00 DEMOLITION		379	-	-
02 50 00 HAZARDOUS MATERIAL ABATEMENT		6,000	-	-
03 30 00 CAST-IN-PLACE CONCRETE		1,127	-	-
04 01 20 MASONRY RESTORATION AND CLEANING		3,461	-	-
04 20 00 MASONRY		-	-	-
05 12 00 STEEL		1,980	-	-
06 10 00 ROUGH CARPENTRY		1,928	-	-
06 13 00 EXTERIOR RESTORATION		500	-	4,800
06 40 16 INTERIOR ARCHITECTURAL WOODWORK RESTORSTION		-	-	-
07 14 00 FLUID-APPLIED WATERPROOFING		-	-	-
07 20 00 STUCCO REPAIRS		8,869	-	-
07 21 00 THERMAL INSULATION		3,994	-	-
07 50 00 ROOFING		-	-	18,432
07 60 00 SHEET METAL FLASHING AND TRIM		1,106	-	6,140
07 92 00 JOINT SEALANTS		-	-	-
08 11 00 DOOR & FRAMES		350	-	1,800
08 32 13 STORM WINDOWS		150	-	-
08 52 00 WOOD WINDOWS		12,000	-	-
08 71 00 DOOR HARDWARE		-	-	-
08 80 00 GLAZING		-	-	-
09 20 00 PLASTER REPAIR		3,000	-	-
09 21 16 GYPSUM SYSTEMS		-	-	-
09 64 00 WOOD FLOORING		-	-	-
09 90 00 PAINTING		3,294	-	-
10 14 00 SIGNS		-	-	-
10 28 00 TOILET AND BATH ACCESSORIES		-	-	-
10 44 00 FIRE-PROTECTION SPECIALTIES		-	-	-
21 00 00 FIRE PROTECTION		-	-	-
22 00 00 PLUMBING		-	-	-
23 00 00 HVAC		450	-	-
26 00 00 ELECTRICAL		100	-	-
31 20 00 EARTH MOVING		391	-	-
31 48 13 UNDERPINNING PIERS		-	-	-
32 13 13 CEMENT CONCRETE PAVING		-	-	-
32 92 00 LAWN & GRASSES		146	-	-
33 10 00 WATER DISTRIBUTION		-	-	-
33 30 00 SANITARY SEWERAGE		-	-	-
33 40 00 STORM DRAINAGE		-	-	1,923
33 46 16 FOUNDATION DRAINAGE SYSTEMS		-	-	-
subtotal		56,609	-	38,059
Contractor's Fee	10%	5,661	-	3,806
subtotal		62,270	-	41,865
Design/Estimate Contingency	25%	15,568	-	10,466
subtotal		77,838	-	52,332
Escalation to Mid-Point - 04/15/2017	3.7%	2,859	-	1,922
TOTAL		80,697	-	54,254

*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-07 Quarters							
02 41 00 DEMOLITION							
Immediate							
Demo Concrete Landing @ West Elevation	110	SF	3.00	329	329		
Remove Straps @ Chimney	2	EA	25.00	50	50		
				379	379	0	0
02 50 00 HAZARDOUS MATERIAL ABATEMENT							
Immediate							
Hazardous Material Abatement Testing	1	LS	2,000.00	2,000	2,000		
Hazardous Material Abatement	1	LS	1,500.00	1,500	1,500		
Radon Mitigation System Inspection & Repair ALLOWANCE	1	LS	2,500.00	2,500	2,500		
Extent of hazardous materials needs to be determined before accurate estimate can be rendered				6,000	6,000	0	0
03 30 00 CAST-IN-PLACE CONCRETE							
Immediate							
New Concrete Footing in Crawl Space 1.5'x1.5'x12"	1	EA	250.00	250	250		
New Concrete Landing @ West Elevation	110	SF	8.00	877	877		
				1,127	1,127	0	0
04 01 20 MASONRY RESTORATION AND CLEANING							
Immediate							
Repoint Foundation Walls	128	SF	8.00	1,022	1,022		
Clean Foundation Walls	256	SF	6.00	1,533	1,533		
Repoint South Chimney	40	SF	8.00	317	317		
Clean South Chimney	40	SF	6.00	238	238		
Restore Mortar Wash @ Top of Chimney	1	EA	100.00	100	100		
Replace Missing Stone	1	EA	250.00	250	250		
				3,461	3,461	0	0
04 20 00 MASONRY							
				0	0	0	0
05 12 00 STEEL							
Immediate							
New Steel Post In Crawl Space	1	EA	150.00	150	150		
Reinforce Corbel @ Center Post @ Basement	1	EA	650.00	650	650		
Anchor Existing Steel Posts	4	EA	50.00	200	200		
Install Painted Pipe Handrail @ Front Porch	6	LF	65.00	390	390		
Install Painted Pipe Handrail @ Basement	6	LF	65.00	390	390		
Repair Foundation Vents	2	EA	100.00	200	200		
				1,980	1,980	0	0
06 10 00 ROUGH CARPENTRY							
Immediate							
First Floor Joist Repair Under Sink	1	EA	100.00	100	100		
Ceiling Joist Repair	4	EA	125.00	500	500		
Repair/Replace Porch Floor and Seal	111	SF	12.00	1,328	1,328		
				1,928	1,928	0	0
06 13 00 EXTERIOR RESTORATION							
Immediate							
Repair Wood Louver	1	EA	250.00	250	250		
Repair Front Porch Trim	1	EA	250.00	250	250		
Long Term							
Replicate Rustic Shutters	8	PR	600.00	4,800			4,800
				5,300	500	0	4,800
06 40 16 INTERIOR ARCHITECTURAL WOODWORK RESTORSTION							
				0			
				0	0	0	0
07 14 00 FLUID-APPLIED WATERPROOFING							
				0			0
				0	0	0	0
07 20 00 STUCCO REPAIRS							
Immediate							
General STUCCO Wall Repair (allow 25%)	296	SF	30.00	8,869	8,869		
				8,869	8,869	0	0
07 21 00 THERMAL INSULATION							
Immediate							
Additional Insulation In the Attic	862	SF	1.00	862	862		
Test Exterior Walls for Insul and Patch holes ALLOWANCE	1	LS	2,000.00	2,000	2,000		
Additional Insulation In the Crawl Space	159	SF	1.00	159	159		
Remove Debris and Install Vapor Barrier in Crawl Space	310	SF	0.85	264	264		
Insulate Foundation Walls	237	SF	3.00	710	710		
				3,994	3,994	0	0
07 50 00 ROOFING							
Long Term							
Demo Roofing and Install New Decra Steel Roofing System	1,536	SF	12.00	18,432			18,432
				18,432	0	0	18,432

DESCRIPTION	QUANTITY	UNIT	\$	TOTAL	Immediate	Short Term	Long Term
HS-07 Quarters							
07 60 00 SHEET METAL FLASHING AND TRIM							
Immediate							
New Downspout Extensions	2	EA	65.00	130	130		
Gutter Covers	195	LF	5.00	976	976		
Long Term							
New Custom Box Gutters	195	LF	25.00	4,880			4,880
Custom Downspouts	84	LF	15.00	1,260			1,260
				7,246	1,106	0	6,140
07 92 00 JOINT SEALANTS							
				0	0	0	0
08 11 00 DOOR & FRAMES							
Immediate							
Replace Storm Door 100/1	1	EA	350.00	350	350		
Long Term							
Replace Back Door w/ Historically Appropriate Door	1	EA	1,800.00	1,800			1,800
				2,150	350	0	1,800
08 32 13 STORM WINDOWS							
Immediate							
Replace Storm Windows @ Window 107	1	EA	150.00	150	150		
				150	150	0	0
08 52 00 WOOD WINDOWS							
Immediate							
Install New Alum Clad Windows w/ Historically Appropriate	6	EA	2,000.00	12,000	12,000		
				12,000	12,000	0	0
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 and Paint ALLOWANCE	1	LS	3,000.00	3,000	3,000		
				3,000	3,000	0	0
09 21 16 GYPSUM SYSTEMS							
				0			0
				0	0	0	0
09 64 00 WOOD FLOORING							
				0	0	0	0
09 90 00 PAINTING							
Immediate							
Paint Bulkhead Door	1	EA	150.00	150	150		
Misc Stucco Painting	1,183	SF	1.50	1,774	1,774		
Misc Paint/Stain Wood Trim/Siding/Windows	1	LS	1,250.00	1,250	1,250		
Stain Wood Trim @ Interior Wood Windows	4	EA	30.00	120	120		
				3,294	3,294	0	0
10 14 00 SIGNS							
				0			0
				0	0	0	0
10 28 00 TOILET AND BATH ACCESSORIES							
				0			0
				0	0	0	0
10 44 00 FIRE-PROTECTION SPECIALTIES							
				0	0		
				0	0	0	0
21 00 00 FIRE PROTECTION							
not applicable				0	0		
				0	0	0	0
22 00 00 PLUMBING							
not applicable				0	0		
				0	0	0	0
23 00 00 HVAC							
Immediate							
Vent Dryer through West Elevation	1	EA	300.00	300	300		
Exte4nd Vent through Roof @ Bathroom 104	1	EA	150.00	150	150		
				450	450	0	0

DESCRIPTION	QUANTITY	UNIT	\$	TOTAL	Immediate	Short Term	Long Term
HS-07 Quarters							
26 00 00 ELECTRICAL							
Immediate							
Install New Glass Shade @ Ceiling Light 107	1	EA	100.00	100	100		
				100	100	0	0
31 20 00 EARTH MOVING							
Immediate							
Regrade at West and South Side of House	49	SY	8.00	391	391		
				391	391	0	0
31 48 13 UNDERPINNING PIERS							
				0	0	0	0
32 13 13 CEMENT CONCRETE PAVING							
				0	0	0	0
32 92 00 LAWN & GRASSES							
Seed							
	49	SY	3.00	146	146		
				146	146	0	0
33 10 00 WATER DISTRIBUTION							
				0			0
				0	0	0	0
33 30 00 SANITARY SEWERAGE							
				0			0
				0	0	0	0
33 40 00 STORM DRAINAGE							
Install French Drain							
	55	LF	35.00	1,923			1,923
				1,923	0	0	1,923
33 46 16 FOUNDATION DRAINAGE SYSTEMS							
				0			0
				0	0	0	0