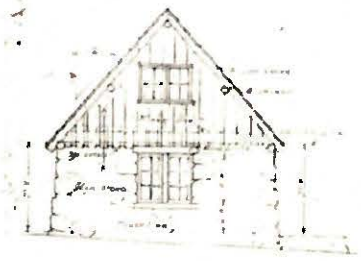
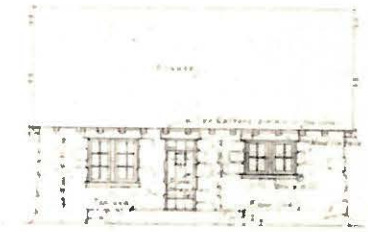
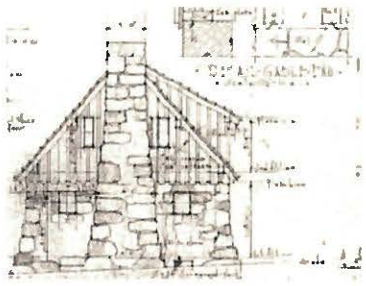
CRATER LAKE NATIONAL PARK

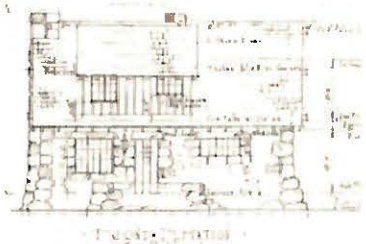
Historic Structure Report & Rehabilitation Guidelines:

Employee Stone Houses #24, 25, 28, 30, 31, 32









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September 4, 2009

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Executive Summary

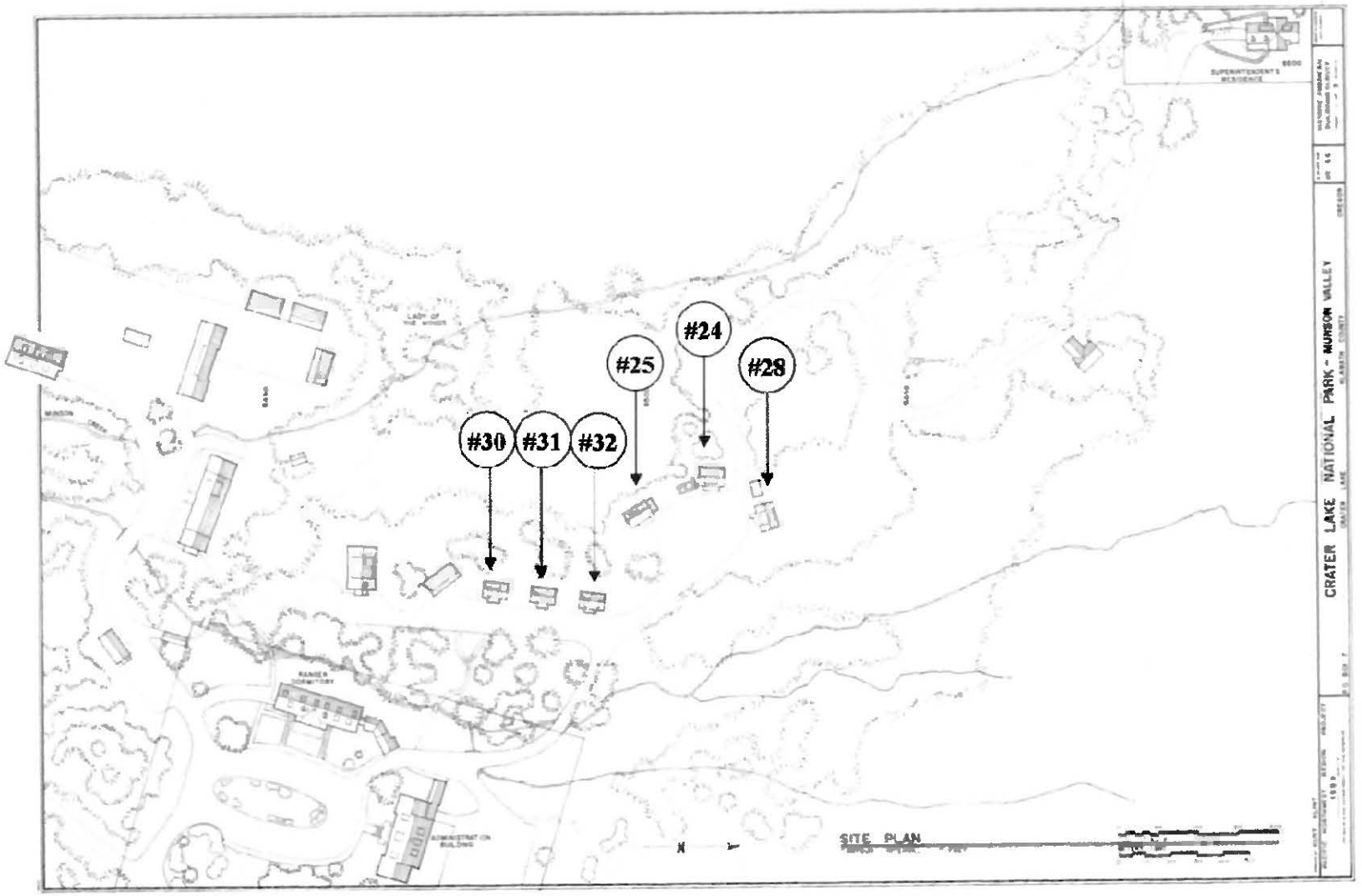
This Historic Structures Report includes detailed physical descriptions, historical research and documentation, measured drawings, condition assessments, and rehabilitation guidelines for six stone employee cottages (#24, 25, 28, 30, 31, & 32) located in the Munson Valley Historic District at Crater Lake National Park Headquarters. These resources are highly character defining of the district's rustic architecture style and early park development and are to be rehabilitated as per the Secretary of the Interior's Standards in a way that preserves the historic design, appearance, and materials. House #31, currently undergoing substantial renovation due to several deferred maintenance issues, serves as a model for assessing condition and rehabilitation priorities in the other five houses, as well as an evaluative tool to expound more effective budgeting, planning, and preservation practices.

Condition, Preservation, and Rehabilitation Priorities:

- Improve ventilation to prevent mold and mildew
- Investigate and repair moisture issues in masonry, roof, chimney, and crawlspace
- Strengthen structural system
    - Truss rafters for added support
    - Stabilize dormers
    - Repair/replace rotten foundations
- Upgrade electrical
- Install fire sprinklers
- Maintain good condition of original materials to preserve historic resources
    - Repoint exterior mortar joints
    - Repair windows
    - Repair board and batten siding
    - Repair and preserve lath and plaster in 20s series
    - Restore knotty pine, or beadboard and fiberboard in 30s series
    - Preserve kitchen cabinetry design and materials or differentiate new
    - Reconstruct historic doors
    - Restore tongue-and-groove Douglas Fir wood flooring
- Prune planted landscape for improved function and building protection
- Employ a regular maintenance plan that ensures proper winterizing, upkeep, repairs, and building preservation

This report determines that it may not be necessary to renovate all six buildings in the same intensity that #31 experienced, that the interior of the stone houses retain more historical integrity than previously suggested, and that compliance must be more carefully followed to preserve this integrity. By fulfilling condition and preservation priorities, accompanied by a regular maintenance plan, the rehabilitation of the other stone houses can be accomplished in a way that is more cost efficient and preservation-friendly to the park and the historic district.

Crater Lake National Park - Munson Valley Site Plan (Historic American Building Survey, 1989)



Introduction

The purpose of this report is to evaluate and provide a rehabilitation guideline for six stone houses in the Munson Valley Historic District in the Crater Lake National Park Headquarters area. These buildings were constructed during the late 1920s and early 1930s and are excellent examples of the National Park Service Rustic style architecture. They are clustered together and share the same general design and overall building plans, although there are slight variations among them.

The houses were originally intended for employee seasonal housing and continue their original function, although they have also been used as year round residences. Regardless, given the climate conditions of Crater Lake National Park, seasonal residents are in the park during cold, wet weather and heavy snowfall. The current conditions of these houses are drafty, poorly ventilated, and insufficient for such weather. The park intends to rehabilitate the interiors of the buildings with improved insulation, structural capacity, ventilation, and restored finishes for better livability and energy efficiency while still retaining the historic character and exterior materials of the original design and craftsmanship. One of these buildings, #31, is currently undergoing substantial rehabilitation and will be used as a model for evaluation and planning for the subsequent rehabilitation projects on the other five buildings, #24, 25, 28, 30, and 32. The rehabilitation of these employee residences is critical to their continued use and preservation of the Munson Valley district's rustic architectural character and overall landscape design.

The condition and rehabilitation planning of the stone houses has been under analysis by various agencies for several years. In 1992, Zaik/Miller/DeBenedetto Architects proposed a renovation plan for houses 24, 25, and 28, but funding did not come available to complete the project. Fletcher Farr Ayotte (FFA) followed up with new plans and analysis in 2007 that focused intently on rehabilitating house #31 and 34, catalyzing the rehabilitation project that is currently underway. FFA's structural analysis, along with the assessment of the Plumbing, HVAC, and electrical systems in house #31 have greatly assisted in the National Park Service's in-house rehabilitation.

The research and documentation for this particular report and project was completed by the author, a graduate student in Historic Preservation at University of Oregon who is seasonally employed at Crater Lake National Park as the 2009 Greg Hartell Intern for Historic Preservation. Through this internship, Crater Lake National Park has developed a partnership with the University Of Oregon School Of Architecture and Allied Arts that offers valuable training and guidance to graduate students in exchange for the research and expertise that interning scholars provide.

The National Park Service and the Department of the Interior encompass the nation's Historic Preservation program and govern its policies. NPS regulates the standards for rehabilitating historic buildings and structures, and should consequently serve as a preeminent example of such practice when doing preservation and rehabilitation work in the agency's own parks. This report provides detailed research and documentation of the historic stone houses and their character defining features, a condition assessment of significant maintenance issues, and

practical solutions for preserving the resources while upgrading and improving their function. All is to be achieved through methods that are sensitive to the historic fabric, thus following agency policy, practice, and standards.

The Munson Valley Historic District is defined by the eighteen historic resources within its boundaries, which are further defined by their design characteristics. These character defining features are what distinguish historic resources and give value to the architectural and cultural heritage of Crater Lake National Park and the broader history of the National Parks movement. Preservation practice as a whole focuses on the protection of such features that are essential to defining not only architecture, but also place, identity and cultural legacy.

Physical Descriptions

General Descriptions

The Munson Valley Historic District has six small stone houses clustered together in the Crater Lake Park Headquarters area that mostly share the same style, plan, and overall design. There are several small variations among the buildings (see Stone House Comparisons table), but their character defining features can be explained in one general physical description.

The six buildings, #24, 25, 28, 30, 31, 32, referred to as the 'stone houses' were built at different times between 1927 and 1931 in the Rustic style typical of National Park Service architecture during this era. The buildings are set in a fairly wooded area up a hill to the west of the park administration plaza. Buildings #30, 31, and 32 are located together in a row with the same orientation and design as a cluster of three identical houses, while Buildings #24, 25, and 28 sit behind them at a slightly higher elevation with varying orientations and designs. Of all six houses, four face east, one faces northeast, and one faces south.

The 1.5 story houses have a rectangular plan and sit on concrete pier foundations.[1] Their design features a high pitched gable roof clad in cedar or sugar pine shake (historically sugar pine) with copper flashing. The roof makes up the entire building envelope for the second floor. It has open eaves and features exposed rafter tails and projecting beams. Several of the houses have a stone chimney that sits either toward the center of the roof (a kitchen chimney) or as a large end chimney. Some of the buildings have both types of chimneys. The bottom floors of

[1] "1.5 stories" (instead of two) is used because the roofline extends down to the first story. Although there is interior living space, along with dormers, on the upper floor, there is no exterior vertical wall indicating this. Architectural and preservation related surveys refer to this as "one-and-a-half stories" or "1.5 stories."

the houses are clad in heavy stone boulders, battered to give the buildings the look of "having sprung from the soil."[2] The second floor gable ends are clad in vertical board and batten siding, painted (originally stained) in the dark brown that is commonly found on park service structures.[3]

All of the houses have dormers, three of which were original (#24, 25, & 28). Dormers were added to #30, 31, & 32 in 1939. While the size and quantity of dormers vary among the six houses, all but #25 have shed roofs projecting off the front of the buildings (#25 has a gable roof on the rear). These dormers match the rest of the building design in details, and feature double 6-pane casement windows.

There are multi-paned casement windows throughout the buildings, most of which are 6-pane, set in pairs. These windows are made of wood in the 30s series houses and of steel in the 20s series. The ground floor windows are accented by their deeply set stone sills and large, heavy timber lintels. Double wood accordion shutters, stained like the wood siding, are the most consistently used shutter on all six buildings. The shutter stops vary from different wood latches to metal hooks. Some of the buildings have egress ladders from the upstairs windows, placed directly above grade level snow grates.

The nearly symmetrical front entries feature a flagstone walkway leading to a concrete porch that is partially enclosed by a stone half wall. There are solid wood or stained tongue-and-groove front doors with brass doorknobs. Several have wood paneled screen doors. The rear entries feature less elaborate stone patios with no half walls and solid wood doors. When the houses are worked on during months with heavy snowfall, wood snow tunnels with steel bracing are installed at the front entrances for improved access to

Character defining features

EXTERIOR

- Rustic style made of native materials that are harmonious with natural landscape
- 1.5 story, rectangular plan
- High pitched gable roof clad in sugar pine shakes, hit-and-miss pattern in 20s series, straight courses in 30s series
- exposed rafter tails
- Shed roof dormers
- Large stone/boulder masonry veneer
- Board and batten siding
- Deep set multi-paned double wood casement windows with stone sills and heavy timber lintels
- Stone half-wall entry patios and flagstone paths.
- Stone chimneys (some stone end chimneys)

INTERIOR

- 6-room plans: kitchen, living room, bathroom, mudroom, two bedrooms
- Exposed brick or stone fireplaces; large hearths in 20s series
- Interior window framing
- Kitchen cabinetry
- Passive refrigeration system
- 1930s period hardware
- Lath and plaster in 20s series,
- Knotty pine in 30s series kitchens with H-1010 molding, beadboard upstairs

[2] Albert H. Good, *Park and Recreation Structures: Part I-Administration and Basic Service Facilities* (Washington D.C.: U.S. Department of the Interior) 1938, 7.

[3] In a 1930 report to the Chief Landscape Architect, Merel Sager, Assistant Landscape Architect at the time, refers to this brown as "Cabot's brown No. 247" which was used on several of the CRLA park structures.

the buildings while protecting the historic fabric from damage associated with snow plow activity.

The interior descriptions of these buildings are separated into two sections due to the similarities and differences among the buildings. Buildings #25, 30, 31, & 32 have a six-room plan with the kitchen, living room, bathroom, and mudroom on the ground floor and two bedrooms, each with a closet, on the second floor. In the 30s series, there is a dormer in each room, facing east. When entering the house from the front entry, the kitchen is on the right and the living room is on the left. The rear entry and bathroom are accessed through the mudroom behind the kitchen.

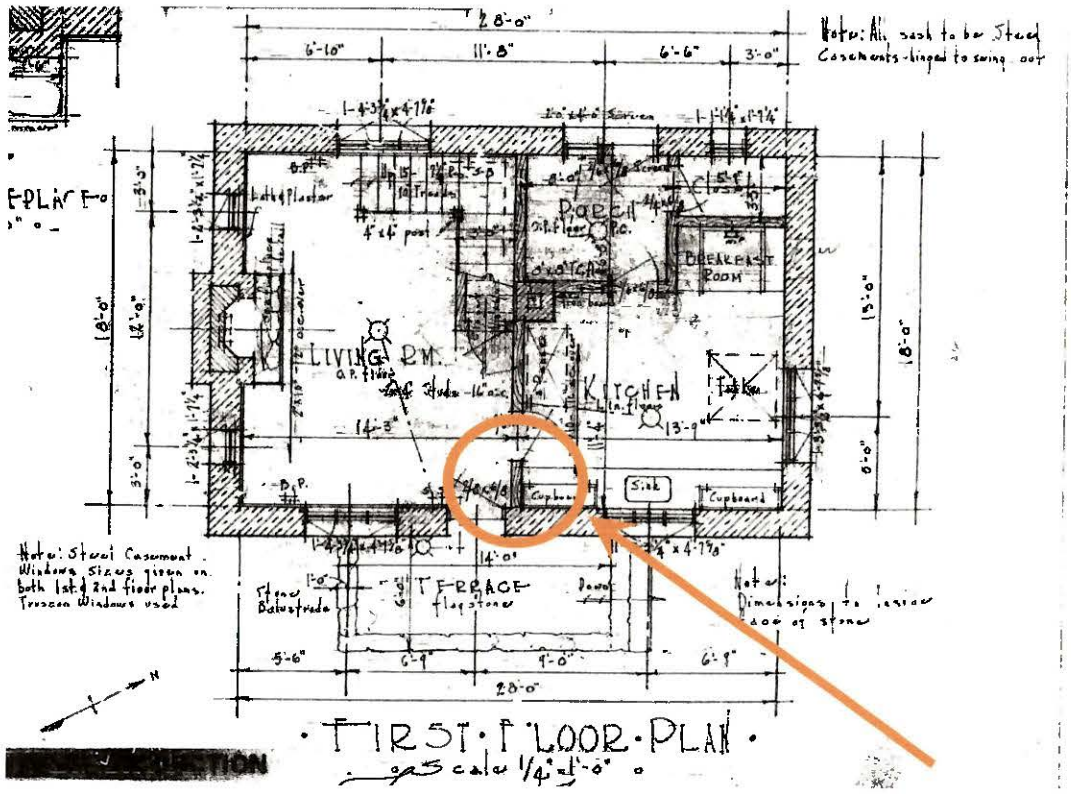
> *"In all buildings for housing superintendent, staff and employees at [Crater Lake National Park], unifying, well-defined structural traits persist. Steep roof pitch, dictated by the heavy snowfall in the high altitude here, and masonry employing boulders of impressive size, combined with rough –sawn boards and battens, are chief among the factors common to all."*
>
> -Albert Good,
> *Park and Recreation Structures, 1938, 87.*

The kitchen has linoleum floors and painted knotty pine panels on the lower half of the walls with Celotex fiberboard above. The painted wood kitchen cabinetry, linoleum countertop, and porcelain sink fills the entire east wall. There is a historic "natural" refrigeration system in the northeast corner of the kitchen. This consists of two circular holes that passively circulate cool air from the outside into the corner cupboard. The holes are covered in plywood on the exterior, but could be repurposed without causing damage to a renovation. The cabinetry hardware varies, and there are remnants of knotty pine and beadboard cladding that sustained early renovations.

Beadboard is found in several hidden places throughout the house. The interiors of closets and cupboards are less likely to have been changed over time, and the existence of beadboard in these places, along with the original plans that stipulate this material, provide evidence of its historic integrity throughout the majority of the house.

In the living room, there is a brick "kitchen chimney" resting against the south wall near the southwest corner. The fireplace has been removed due to the unlined historic chimney, and a gas furnace sits in its place. An exposed wood stairway leads upstairs from the northwest corner of the living room, turning ninety degrees on a landing after five steps to continue east up the remaining eleven steps to the second floor. The stairs enter into the southern bedroom, which is the larger of the two upstairs rooms. There is a built-in dresser and painted woodwork around the stairway. The north room is smaller with no built-ins. Each bedroom has an east facing dormer and a closet.

Buildings #24 and 28 are slightly larger in square footage. These houses also have a six-room plan with the kitchen and living room on the ground floor in the same layout as the other houses. However, instead of a ground floor bathroom, a large pantry takes its place. The kitchen cabinetry is of the same period and style as the 30s series, but varies to fit the specific space. The entry between the kitchen and the living room is wide and open, different from the standard man door specified in the original plans. This change was presumably made after 1949, as the sketch plans in the 1949 building folders do not indicate the alteration. A large, battered stone fireplace, flanked by two small windows, fills most of the living room end wall. The original wood floors remain and are in good condition. There appears to be more detailed woodwork on the stairway, given the wide molding and open rails above the landing where, in the 30s series, the stairway has been enclosed. Upstairs, the single wider dormer creates extra space and a window seat for one bedroom, and also provides additional space in the bathroom. The walls and ceilings are finished with lath and plaster. Upstairs the plaster is skillfully applied so that the diagonal roofline meets the ceiling at a soft curve instead of a sharp angle. There are built-in closets in both bedrooms. The bedroom that shares a wall with the chimney has two narrow windows, while the other bedroom window has three 4/4 vertical panels. The chimney is not exposed on the second floor. The one-inch window sills all have the same detailed molding throughout the house. The designed landscape was intended to be harmonious with the native



NPS Chief Landscape Architect Thomas Vint's 1931 plan for Employee Residence Gov't Camp (Drawing courtesy of Crater Lake National Park Museum & Archive Collection).

surroundings. There are several mature conifers and native plants in the surrounding wooded natural landscape, but very little of the original garden design remains around the houses. The shrub, *sorbus sitchensis* (Mountain Ash), is present and is planted extremely close in several places. In addition, There are also some other small landscape elements, such as a wooden box that covers the gas access, a sewer access cover, and snow grates below the second floor windows.

The original plan and sheathing appear to be intact and retain excellent integrity. Most repairs have been done in-kind using matching stone, wood, or pine shake. However, several of the past masonry repair or repointing jobs were done with incompatible materials, such as black silicone or orange spray foam. These inappropriate repairs are easily reversible. The windows retain good integrity, and match in materials. Overall, these buildings are highly contributing resources to the Munson Valley Historic District for their integrity, design, and function as rustic style employee residences for Crater Lake National Park staff.

There are two 1950s garages (#24A & 28A) on the upper level of the stone house cluster. They are both constructed of wood and have low pitched shed roofs. One is approximately the size of a 2-car garage while the other is much smaller. Neither of these associated buildings contributes as a historic resource in this district.

Stone House 24 – East Elevation

Specific Descriptions

Stone House 24

Building #24 has the same plan, design and features as Building #28. The house was built in 1931 and faces east. It is located in the center of the three stone houses on the upper level. It has a large stone end chimney on the south side and one shed roof dormer with two double windows on the east side. The boulders that make up the wall structure are much larger than what is used for the other buildings. The windows on the north gable side have three 8-pane windows on the second floor all set in the same window frame, and three 6-pane windows clustered together on the bottom floor. The fenestration on the rear has a 1x1 hopper, a 12-pane and a set of three 8-pane casement windows. There is a solid wood door with a screen door. The wide stone chimney covers most of the south façade, but there it is flanked with two vertical 3-pane windows on the second floor and two 4-pane windows on the bottom floor. The windows have historic brass handles. The timber lintels are cut at a diagonal at the edge. This building was initially used by the resident Bureau of Public Roads engineer during the construction of Rim Drive.

The building has the only front entry patio set at grade. The concrete slab at the rear entrance is approximately 5'x5'. A large 1950s flat roofed wood garage with slider doors sits to the south of the building. It is propped up on the south side due to heavy snow loads.

Stone House 25 – Northwest (rear) Elevation

Stone House 25

Building #25 is unique from the other five buildings in its plan, dormer, and patio. The house was built in 1931 and faces northeast. It is located the furthest south of the three stone houses on the upper level. A large stone end chimney rests against the southeast side while a smaller stone chimney sits on the southwest slope near the center of the roof. A snow entrance addition projects off the northwest side of the building, but does not appear to be damaging to the historic stone veneer. A gable peak dormer extends off the southwest (rear) side of the house. All of the windows on the house are double 6-pane casements with perpendicular timber lintels. There are no second floor windows on the southeast elevation. Building #25 is the only of the six that does not have a stone half-wall surrounding the front patio. The concrete patio is slightly above grade and not rectangular and less uniform in shape than the others. There is a solid wood door with a screen door. The solid wood rear entry door sits above grade and is accessed via a 3-step stone and concrete porch. The landscape behind the house has been terraced with native stone materials.

Stone House 28

Building #28 has the same design, plan, and details as Building #24.

The house was built in 1931 and faces southeast. It is located the furthest north of the three stone houses on the upper level. The boulders that make up the wall structure are much larger than what is used for the other buildings and protrude out from the corners, especially at the base. The stone porch entrance was altered from the other designs because of topographical reasons and was originally

Stone House 28 – Southeast (front) Elevation

accessed from the west side. Later changes reconstructed the entrance to the orientation it is now, accessed from the front. A 1954 wood shed sits to the southwest of the building with a low pitched shed roof and double doors. The Mountain Ash landscape plants around the house are very large and quite overgrown. This house was traditionally used by the chief ranger of the park.

Stone House 30

Stone House 30 – East (front) Elevation

Building #30 has the same orientation, plan, design, and details as Buildings #31 and 32. The house was built in 1929 and faces east and is located the furthest north of the row of three identical stone houses on the lower level. It has a chimney on the west ridge near the south end of the building. Two shed roof dormers project from the east (front) and contribute to the nearly symmetrical façade. Each dormer has two 6-pane wood casement windows. There are double 4-pane and double 6-pane windows on the rest of the house. The timber lintels are cut at a right angle. The flagstone walkway leads to the stone half-wall porch which sits about 6" above grade.

The stone half-wall for Building #30 appears to be slightly taller than the walls for the other five houses. The original address number is nailed to the heavy timber lintel above the original tongue-and-groove wood front door. A 3-panel screen door is also present. There is a flagstone patio at the rear entrance; however, the rear door and windows are boarded up.

Stone House 31

Stone House 31 – East (front) Elevation

Building #31 has the same orientation, design, plan, and details as Buildings #30 and 32. This house was first occupied by William G. Steel, a leading founder of Crater Lake National Park, from 1928-1931.

The house was built in 1928 and is the located in the center of the row of three identical stone houses on the lower level. Several of the windows and both doors

have been removed for repair. The house is currently undergoing interior renovation to increase the thermal insulation value, resolve several deferred maintenance issues, and upgrade the overall livability. This renovation reflects the park's intentions to rehabilitate all of the 'stone houses' and will be used as a precedent for the rehabilitation planning of the five buildings.

Stone House 32

Building #32 has the same orientation, design, plan, and details as Buildings #30 and 31.

The house was built in 1927 and is the located the furthest south of the row of three identical stone houses on the lower level. The battered corners are well defined in comparison with the other buildings. All the windows on this house are double 6-pane windows, but the exterior sills have been covered with rectangular concrete slabs. There is an aluminum ladder on the north elevation for egress from the second floor window. The rear entry features a white 6-panel door with a screen door.

Stone House 32 – West (rear) Elevation

CRLA Munson Valley Employee Stone Houses Comparison

House	#24	#25	#28	#30	#31	#32
Const. Date	1931	1931	1931	1929	1928	1927
Orientation	East	Northeast	South	East	East	East
Dormers	1 shed on east, with 2 windows	1 gable on west	1 shed on south w/2 windows	2 shed on east w/ 1 window	2 shed on east w/ 1 window	2 shed on east w/ 1 window
Windows	1/1, 4x4 6x6, 8x8, 6/6, 3, 2x2 stl csmnt	All 6x6 wood casement	1/1, 4x4 6x6, 8x8, 6/6, 3, 2x2 stl csmnt	6x6, 4x4, 1/1 wd csmnt with storms	4x4 wd csmnt, 1/1 storms, others tbd	All 6-pane or 6x6 wood casement
Shutters	Bi-fold	Bi-fold, wood rect. stops	Bi-fold, wd. tear-drop stops	Bi-fold	Bi-fold and casement w/ metal hooks	Bi-fold and casement w/ metal hooks
Rafters	26	26	26	24	24	23
Boulders	Large	Medium-approx 1' dm.	Large, flat faced	Medium	approx 1' dm.	Medium
Siding	B&B, scalloped edge	B&B, scalloped edge	B&B, scalloped edge	B&B, straight edge	B&B, straight edge	B&B, straight edge
Chimney	Stone end on S	(2) Stone end on SE; center of W ridge	(2) Stone end on W; center of N ridge	SW ridge	SW ridge	SW ridge
Front Patio	At grade, stone half wall	No stone wall, concrete slab only	3 steps to patio, stone half wall	Approx 5" step, tallest stone half wall	Approx 5" step, stone half wall	Approx 5" step, stone half wall
Front Entry		Solid wood door + screen door	Solid wood door + screen door	vertical T&G, stained wood + screen door	In repair shop	
Rear Patio	3 steps up	Concrete slab with stone steps/base	Small slab, picnic area	Stone at grade	Stone at grade	Stone, sinking into ground
Rear Entry		Solid wood door (sits above grade)	Solid wood door + screen door	Boarded up	Boarded up	White 6-panel door + screen door
Timber Lintels	Diagonal	Perpendicular	Diagonal	Perpendicular	Perpendicular	Perpendicular
Grates	N side	None	NE side, NW side	N side	S side, filled in on N side	N side, S side
Additions	None	1-story on N side	None	None	None	None
Assoc. Resources	Garage to S	Garage to N (same for #24)	Shed to SW	None	None	None
Interior	Lath & Plaster	W window framed w/ oak	Lath & Plaster	Beadboard, celotex, knotty pine	2009 Rehab w/ beadbrd.	Beadboard, celotex, knotty pine
Landscape	Overgrown Ash	Overgrown Ash	Overgrown Ash	Overgrown Ash	Overgrown Ash	Overgrown Ash
Ladder	None	None	E side		N Side	N Side

Buildings History

The building and occupancy history of the stone houses is valuable for understanding their intended uses, designs, and alterations. Throughout history, improvements have been made to the original designs that have caused each stone house to vary slightly from the others. It is the goal of Crater Lake National Park, through the preservation and rehabilitation of these resources, to share the story of the stone houses, as they have existed over time, while maintaining cohesion and integrity of their historic character.

Albert H. Good, architectural consultant for the National Park Service, published *Park and Recreation Structures* in 1938, which has served as a guide to the building and design philosophies of the Rustic architecture style. Good provides general recommendations on designing national park service employee quarters that describe the expected goals associated with the construction of the stone houses. "The typical problem is simply an efficiently planned five- or six-room rural dwelling that stresses the importance of fitness to environment. Climate, comfort, traditions, and above all the budgets of the park and of the occupant, whether superintendent or naturalists, warden or workman, should be duly weighed."[4] Staff housing, such as the stone houses, was a carefully planned and integral part of the park headquarters. "Employees' quarters should be convenient to, without obtrusively invading, the intensively used areas."[5] Site planning was equally as important to the overall landscape and to benefiting the services that a park provides.

The houses were designed by several landscape architects and architects that worked for the National Park Service Branch of Plans and Design in San Francisco. Laura E. Soulliére's *Historic Roads in the National Park System* states, "The branch was responsible for preparing master plans governing development in the parks and monuments and providing advice to the director and superintendents on matters varying from architecture and landscape architecture to development policy."[6] Thomas Vint, Merel Sager, and Francis Lange, leading designers in the National Park Service and practitioners of the NPS rustic style, led the development of the park headquarters at Crater Lake along with headquarters planning and design for several other national parks. Their signatures are frequently found on the original drawings, specifications, and alteration plans for the stone houses along with all the buildings in the Munson Valley district. (For more contextual history on the development of Munson Valley, see Appendix IV).

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[4] Albert H. Good, *Park and Recreation Structures: Part I-Administration and Basic Service Facilities* (Washington D.C.: U.S. Department of the Interior) 1938, 73.

[5] Good, 73.

[6] Laura E. Soulliére, *Historic Roads in the National Park System* (United States Department of the Interior, National Park Service: Denver Service Center), 1995. Accessed 9/25/2009 < http://www.nps.gov/history/history/online_books/roads/index.htm>

The original architectural drawings and plans for the stone house yield very useful information about the original materials and finishes that can be used in preservation and restoration practices (see Appendix V). For example, the plans for the 30s series of houses indicate that 8-inch log vergeboards and lookouts once trimmed the gable ends, while the 10-inch timber lintels and 1"x4" battens sealed the vertical sheathing. The interior walls appeared to have been directly attached to the frame without any insulation. The interior of the 30s series featured Celotex tiles above 1"x12" wainscot while lath and plaster was predominate in the 20s houses. The sills were stone, sealed with calking. The front door was originally vertical board with long black iron hinges, identical to the doors still found on several of the buildings within the Munson Valley Historic District, but not the stone houses themselves.

The Munson Valley Historic District was listed in the National Register of Historic Places in 1988 for its significance associated with Landscape Architecture, Architecture, and the development of Crater Lake National Park between 1925 and 1949. The boundary of the district was decreased in 1997 and the nomination was resubmitted to include 1900 to 1924 in the period of significance. The resources in the district are expressive of the National Park Service's development of the Rustic Architecture style, and represent the work of Merel Sager, Francis Lang, Thomas Vint, and other park service architects, landscape architects, and planners of that era. According to Good, rustic style is successfully achieved "through the use of native materials in proper scale, and through the avoidance of severely straight lines and over-sophistication, [that] gives the feeling of having been executed by pioneer craftsmen with limited hand tools. It thus achieves sympathy with natural surroundings and with the past."[7] Munson Valley Historic District possesses high integrity of location, design, setting, materials, workmanship, feeling and association.

Merel S. Sager's August 1930 report on the progress of Employee Residence #25:

Construction is rapidly going forward on this residence, and at this writing the stone walls are complete, and rafters on. Superintendent Solinsky desired to incorporate a fireplace in the living room and drawings were submitted of both interior and exterior. It was decided to place a window on either side of the fireplace, and to construct an exterior rock chimney. It is planned to light the second story bedroom at this end by a dormer window facing to the back of the house.

Careful supervision was given [to] the rock work of this residence, and it appears to be a distinct improvement over the previously built stone buildings both as to size of rock and workmanship.

1932 Final Construction Report of No. 406 Employee's Cottage at Headquarters (presumably House #25), project completed June 30, 1931:

This is a two-story stone and frame structure in the Headquarters group. It is 18 x 28 feet inside measure and is modern throughout. The walls and ceilings are all lath and plaster. The outside wood work is stained brown and the roof is covered with sugar pine shakes stained green. Wood sash and swinging type fly screens are used on all window openings. There is a large stone finish fire place in the living room and a large back porch. The rooms consist of living room, kitchen, back porch, bathroom and two bedrooms.

[7] Albert H. Good, *Park and Recreation Structures: Part I-Administration and Basic Service Facilities* (Washington D.C.: U.S. Department of the Interior) 1938, 5.

Stone Houses Timeline

1927-Building #32 constructed.

1928- Building #31 constructed.

1928- 1931- W.G. Steel occupies House #31, paying $20-20/mo. rent.

1929- Building #30 constructed.

1931- Buildings #24, 25 & 28 built.

1930s Bear attack causes significant damage in House #31

1939- CCC renovates Buildings #30, 31, 32 with new dormers, stone porches, celotex and knotty pine walls, light fixtures, brick flues, painting, etc. $1492 project completed October 11, 1939 after 450 man days.

1949- NPS building folders created with specs for each resource, noting their function as year-round residences, although original intention was seasonal housing.

1954- Snow tunnel shed entries built over original stone porches.

1954– Insulation and heaters added

1956- Aluminum shingle roof added to Building #31.

1957- Interior plaster removed in #25 and plyboard installed.

1962- Sheet metal roofs installed over original sugar pine shakes.

1969- Staining wood shingles forest-green is banned as a NPS practice for being inharmonious with landscape

1989- 2nd floor water pipe froze and broke in House #28, causing damage.

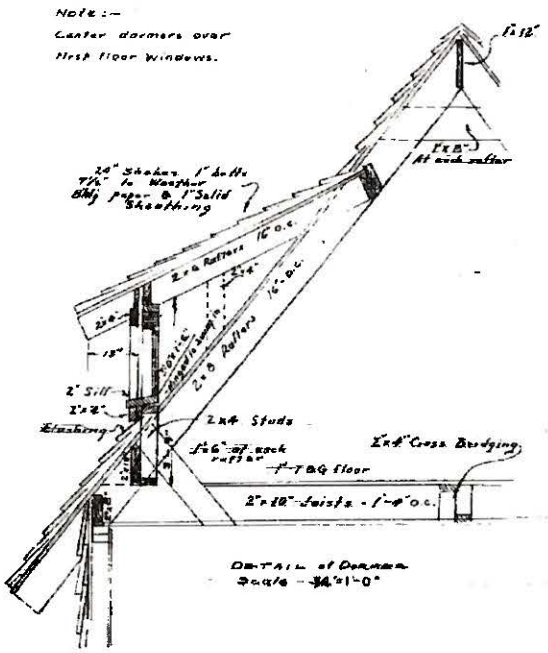
1997/98-Sugar pine shakes restored

Early 2000s- Removed snow entrances

2009- Building #31 undergoes substantial interior rehabilitation.

30s series before dormers (CRLA Museum & Archives)

30s house with dormers (CRLA Museum & Archives)



Detailed drawing of 1939 dormer addition for 30s series stone houses (CRLA Museum & Archives)

Condition Assessment ~ Overview

Critical Issues

- Rotten floor joists and beams
- Deteriorated foundation
- Mold caused from lack of ventilation
- Shallow crawlspace in need of excavation
- Weak and deteriorated roof elements: dormer structure, rafters
- Lead Paint/Asbestos tile abatement
- Deteriorated masonry stone mortar in need of repointing
- Pest (rodent and carpenter ant) control

Preservation Maintenance

- Board and batten siding (minor repair/replacement)
- Seal heavy timber lintels.
- Repair windows and replace window frames
- Reconstruct historic doors
- Replace/repair shutters
- Prune overgrown Mountain Ash in landscape
- Replace missing house numbers
- Reverse inappropriate masonry repairs (silicone on stone, spray foam, concrete in sills, incongruent mortar mixes).

Interior Details

- Replace carpet with restored wood flooring
- Cabinetry, bathtubs, sinks, lighting fixtures, hardware- should retain original where possible.
- Cabinetry restoration and lead paint abatement
- Preserve and restore knotty pine, or beadboard and fiberboard finishes in 30s series houses
- Retain and preserve lath and plaster in 20s series houses

Building Upgrades

- Add insulation
- Improve ventilation and heat
- Plumbing upgrade with new copper pipes
- Electrical upgrade
- Install fire sprinkler with proper drainage

Condition Assessment ~Specific Issues

Structure

Several structural upgrades were made to House #31 as part of its rehabilitation. Some of these issues may be extrapolated to the other houses based on their construction (i.e. lack of structural framing around windows and dormers), while other issues, (i.e. rotten floor and foundation) will be determined by the maintenance history and condition of each building.

- Several of the **floor** joists were rotten in House #31 caused by a leaky roof. The entire floor was removed and replaced. After the floor was removed, the crawlspace was excavated by approximately one foot, allowing for enough space to actually move around under the house. Roughly three cubic yards of earth were removed in this process.
- New **footing piers** were built in #31, and a new concrete **stemwall** was poured along the outer edge to stabilize the foundation where the previous masonry had eroded. The stemwall footing was reinforced with rebar that was drilled into the stone. This excavation and foundation work likely work likely could not take place in the other houses without removing the existing flooring system.
- 4" x 6"s were used to stabilize the **dormers** in #31, which previously had very little structural support. The original dormer rafters went up and rested on top of the larger rafter system, but these and the framing were made of only 2" x 4"s. The snow that piles on the dormers every winter and the entire dormer system could cause the dormer roof to collapse from the rafters. According to a structural analysis by TM Rippey Consulting Engineers (TMR), who worked with FFA in 2007, the dormers were overstressed more than 400% .[8]
- According to a Crater Lake carpenter, the equal snow loads coming from both sides of

Deteriorated masonry foundation

Rotten floor joists from freeze and thaw of moisture in crawlspace

[8] TM Rippey Consulting Engineers' Report on Renovation of Building 31 can be found on the CRLA shared drive (S:\House 31_34 Rehab\ Scoping%20Report.pdf).

the steep gable roof will compress the **rafters** and have severe impacts on their structural strength. TMR's structural analysis indicates that the rafters in House #31 were overstressed by 25%. The entire rafter system of both the dormers and the overall roof has been trussed with plywood for added structural strength.[9]

- The gable windows have hardly any structural members. In #31, the window frames have been rebuilt and stabilized with extra 2" x 4"s.

Ventilation

A majority of the rehabilitation efforts on House #31 and in planning for the others is aimed at increasing the energy efficiency of these buildings, which is duly caused by increased ventilation.

- By adding **insulation** and increasing the R-value of the buildings, these houses will be more cost effective in their energy use, and more comfortable to live in. Insulation is to be added wherever reasonably possible.
- If **insulation** is to be increased, **ventilation** must also be increased to provide appropriate air flow for moisture and condensation. For example, in Stone House #31, insulation was added below the floor joists when these were replaced. In order to do this and ensure proper ventilation is such a wet part of any house, the crawl space was increased in depth.
- The interior of House #31 was gutted to provide new flooring, finishes, and **wall insulation**. In the National Park Service Preservation Brief, "Conserving Energy in Historic Buildings," Baird M. Smith discusses the destructive nature to historic materials and overall cost-ineffectiveness of adding wall insulation to smaller historic buildings. "Wall insulation is not particularly effective for small frame buildings (one story) because the heat loss from the un-insulated walls is a relatively small percentage of the total, and part of that can be attributed to infiltration." If wall insulation is necessary in this climate, consider using Homasote, a fiberboard that mimics the appearance of historic Celotex. The other stone houses may not need to be completely gutted, especially those that retain interior historic fabric, like the walls and ceiling in Building #28, where it may be possible to mitigate the moisture damage and repair the lath and plaster in an effort to restore the historic materials.[10]
- **Ice Shield** has been placed between the wood interior and the stone exterior to prevent ice dams caused by the freeze-thaw cycle in the snowy winter months. Ice dams can also be prevented by adding insulation to keep the hot air out of the attic that melts the snowpack and increasing ventilation to keep the roof cool. The ice shield membrane, if not properly installed, can actually cause more water infiltration and damage than it

[9] TM Rippey Consulting Engineers' Report on Renovation of Building 31.

[10] Baird M.Smith, "Conserving Energy in Historic Buildings," in *Technical Preservation Series: Preservation Brief 3.* (National Park Service, U.S. Department of the Interior) April 1978. Accessed 7/28/2009 <http://www.nps.gov/history/hps/TPS/briefs/brief03.htm>

would without the application at all. Ensure that contractors or seasonal day labor, as is usually the case, are adequately trained in installing the ice shield, supervise the project, and evaluate the work to correct any mistakes before sheathing over the top of it.

Masonry

The condition of the mortar is a high priority in ensuring the successful rehabilitation of these buildings, even if it was not discussed in previous assessments by other firms. It can be an expensive and timely project to renovate the interior, but is a waste if the moisture barrier of the masonry walls is not equally maintained and sealed. Most of the present mortar joints are cracked on most of the houses, especially at the masonry edges. In many cases, the mortar has deteriorated and left large, gaping, open joints.

There are several instances on the stone houses that indicate that past repointing jobs may have been inappropriately done without properly considering the details of these historic masonry buildings.

- Some of the masonry, particularly on Building #30's patio half-wall, has been repaired with an orange spray foam. This was likely to fill holes and protect the building from rodent infestation, but today, these spots are unsightly and highly incongruent with the rest of the masonry veneer.
- Some of the masonry joints, particularly on Building #30, have been covered with a soft black silicone. This was likely to connect the snow tunnels to the stone buildings. The materials are quite dissimilar and can easily be separated and peeled from the stone surface.
- The mortar is not recessed as it should be, but protrudes in many places, creating more surface area for moisture to penetrate the joint. The joints should be tooled back ½" from

Spray foam in masonry joint

Black silicone used for attaching snow tunnels on patio wall

the stone masonry surface to form proper drips and be compatible with the historic craftsmanship.

- The mortar is loose and broken into small pieces, indicating that the joint was not properly cleaned of its previous mortar before repointing. The new mortar may have been spread over the old.
- On the east elevation of Building #30, the mortar was smeared across the masonry, and then almost raked or tooled in a quick smooth-over that did not effectively work.
- There are several patches of mortar throughout the masonry of the buildings, none of which really match in color, aggregate, or likely porosity (although not measured in this assessment). There are so many instances of these patches that it is possible to view the continual history of the repointing maintenance because it appears as though all the repointing jobs were done with a different mortar mix.

Mortar, in both historic and modern buildings, is not meant to last forever. Its main function is to soften and fail in a sacrifice to save the masonry. Therefore, there is no reason to differentiate old mortar from new in adhering to the Secretary of the Interior Standards for Historic Preservation. When undergoing the next major repointing job, and all subsequent small projects, the same mix should be used to prevent this in the future. Ideally, the mix should match the historic mortar, as a way of reflecting the historic materials and methods of the original craftsmen. The original mortar mix was specified as 1 part Portland cement and 3 parts clean sharp sand.

Zaik/Miller/DeBenedetto Architects set specific recommendations for mortar mixes in their 1992 proposed renovation plan for Stone houses 24, 25, 28. The aggregate mixture the firm recommends is ANSI/ASTM C144-87. The existing color can be matched with a proper combination of cement, sand, and up to one liquid tablespoon of black to reduce the whiteness for a closer match.[11] See Appendix VII for the detailed formula that the firm provided. The present masons at Crater Lake National Park have somewhat modified this formula for a lime/Portland cement mixture that is slightly softer and more compatible with the existing mortar.

Winterizing

These houses are used and occupied as seasonal residences for park staff. For various reasons, the preservation of these buildings might be superior if staff did reside in them during the winter. Occupancy is considered the best system to regularly monitor maintenance and renovation needs without suffering problems that fester and become worse in the absence of attention. However, there are costly drawbacks associated with year round occupancy involved with heating and snow plowing around the entrances. These buildings should be routinely

[11] Zaik/Miller/DeBenedetto Architects, *Stone Buildings No. 24, 25, 28, Renovation Report*, 1992, NPS Crater Lake Maintenance Archives, 4100-1.

monitored with a regular maintenance plan to service and guarantee optimum operations of the entire building system. Properly winterizing specific components of the buildings are vital to a regular preservation and maintenance plan.

- The temporary **Snow Tunnels** can be obtrusive to historic fabric and must be installed with care for buildings that undergo maintenance projects in the winter. When snow tunnels are removed, the black sealant should also be removed form the stone terrace walls for a clean appearance through the summer months. The snow tunnel on House #25 was not removed after winter, with the intention of saving the removal time and also to provide extra storage for the occupants. This may not affect the physical condition of the building, but the snow tunnels can retract from the visual character of the historical resources. Snow tunnels should be removed for the summer season when the historic district has several visitors and the tunnels are not needed.
- Proper winterization of **pipes** is one of the most important maintenance tasks that must occur every year by a knowledgeable staff member. The building records show that House #28 suffered severe water damage after the 2nd floor pipes froze and broke in 1989. This avoidable incident occurred because the pipes were not properly drained. Drain all pipes, toilets, and heaters, making sure there is no water left in any pipes. According to This Old House website, a third- to a half-gallon of nontoxic antifreeze can be poured into the toilet bowls "to keep the liquid sealed between the sewer or septic system and the air in the house."[12]
- **Permanent shutters** were installed in the recent past as a way to save time in maintenance every year. They are bi-fold style and are held open and closed with wood or metal stops or hooks, causing no or very little harm to the window frames. If other shutters are to be used in the future, never nail into the window frame. This has occurred in the past and can be highly detrimental to the window system. The rehabilitation plan calls for new modern wood mesh screen shutters that match the rest of the district and need to be installed and removed every year. These may not be necessary, especially if the houses will experience more frequent use during heavy snow fall months. The current bi-fold shutter system could be more "neatly" finished for aesthetic purposes. The addition of wood storm windows, with these

Bi-fold plywood permanent shutters

[12] Steve Thomas, "Winterizing a Cold-Weather Home" at This Old House website. Accessed 9/19/09 <http://www.thisoldhouse.com/toh/asktoh/question/0,,216641,00.html>

shutters, would greatly assist in retaining warmth and improving energy efficiency.

- The new **cadet heaters and exhaust fan** in House #31 are efficient in retaining a dry interior environment that is not conducive to mold. If these are left on in the winter at a temperature of 45-50 degrees, this may substantially decrease the mold and mildew hazards that have been a regular problem in all of the unoccupied buildings.
- Check for and maintain adequate capping, sealing, and flashing on chimneys every year.

Water stains and sagging ceiling caused by chimney leak in House 30.

- House #31 required significant **crawlspace excavation** to mitigate severe snow infiltration and make room for added insulation and HVAC equipment. The roof and walls leaked and high levels of moisture accumulated in the crawlspace. The freeze-thaw cycle caused the floor joists to rot, requiring a full overhaul as part of the building rehabilitation. It is a critical priority to assess and prevent similar disasters from occurring in the other houses, especially because this sort of repair requires a complete removal and overhaul of the floor and foundation system.

Chimneys

The chimney on House #31 leaked and caused the floor to rot. There is evidence of a chimney leak in House #30 as well. Every chimney should be examined each year for appropriate capping, sealing, and flashing to prevent disastrous moisture infiltration from occurring in the future. The **chimneys** were originally unlined (which is not compliant with modern building codes) and are now sealed off from inside to prevent use. However, the chimneys are not properly capped to prevent water from entering the building. Various capping methods have been used throughout the historic district, and the multiple options should be discussed in future dialogue.

- Unsightly plastic bags have been used to cover the chimneys every winter and prevent leaking, but they are not always removed in the spring. Is there a more permanent solution with a stronger aesthetic value?
- Some of the chimneys have metal caps and hoods which are suitable but may fall off in snow build-up or winter winds.

- As new caps are made, materials should be durable and long-lasting. Copper is the most resilient material for chimney capping, but also the most costly.
- The Sager Administration Building chimney has been sealed with a large stone cap. This appears to be a functional and aesthetically compatible method, but the stone may not need to be as large for the smaller structures.
- Perhaps the chimneys can be permanently sealed on the inside, and then capped for added protection.
- If the small kitchen chimneys are not in use, structural analysis may suggest that the interior part of the chimney may not need to remain, especially since the through system of the chimney and its leakiness is quite detrimental to the rest of the structure. The exterior appearance of the chimney is highly character defining and should not be removed.

Board and Batten Siding

Board and Batten is a traditional method of siding where wider (6-12 inches wide) vertical boards are placed flush against each other with a joint running between. A batten, narrower vertical board (1-3 inches wide) is placed over the joint to reduce air and moisture penetration.[13] Careful installation technique must be used, however, to allow for the wood to be flexible without cracking or warping, which appears to have happened in several instances on the stone houses. When repairing or replacing the siding, it is recommended that the following techniques be adhered to.

- Before installing, treat all sides (including ends) of seasoned boards and battens with preservative if staining, or primer if painting.
- Attach the boards to furring strips, leaving about a half-inch gap between each board. If boards are 6 inches wide or less, use one nail or screw per furring strip, placed through the center of the board. If boards are wider than 6 inches, use two nails or screws, placed three inches apart from the center. Do not nail through the edges of the boards. This will cause splitting when the wood expands and contracts.
- Battens are to be attached to the building with nails or screws that penetrate the center of each batten and the joints between the boards. Do not attach the battens directly to the boards as this will cause splitting and cracking as the wood flexes. Tip: Nail or screw through the battens before attaching to the building. The attached fasteners are a helpful guide to correctly connect to the joints between each board.
- For well-sealed siding, caulk vertical cracks between boards and battens with a flexible medium.
- Boards and Battens should be checked and repaired on a regular annual basis.[14]

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[13] Robert Young, *Historic Preservation Technology*(Hoboken, NJ: John Wiley & Sons) 2008,180.

[14] http://www.holoweb.net/~liam/homeowner/board-and-batten-siding.html accessed August 4, 2009.

Exterior Paint

- While the board and batten siding was originally coated with a Cabot stain, but more recent maintenance has switched to a paint that matches in color. However, priming the wood exteriors before painting has not been a regular part of routine maintenance in the Munson Valley District. Funding for paint projects may be easily attainable and can be done regularly, but is also a waste of resources if the correct process is not followed. Priming a surface may take more time upfront, but it considerably prolongs the life of an exterior coat of paint. The next time these buildings need to be painted, all steps of the cleaning, priming, and painting process should be completed.

Interior Finishes

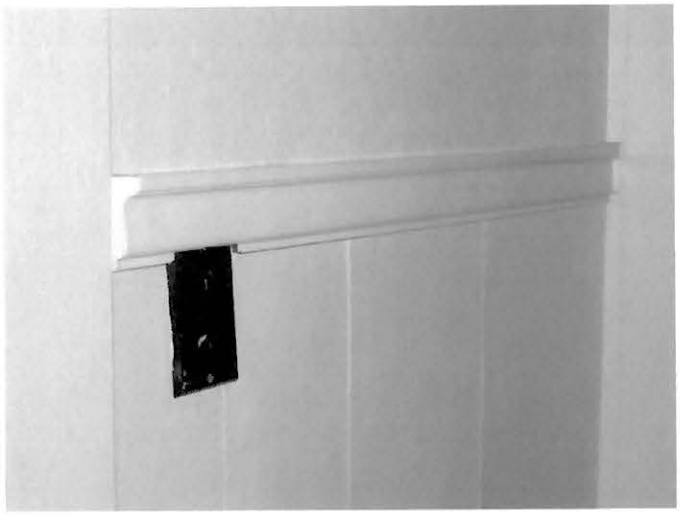
The interior of House #31 was determined by the regional historical architect to have no historically sensitive finish materials and was subject to extensive alterations in its rehabilitation. However, the layout, along with several of the materials, greatly contributes to the historic character of the stone houses. The cabinetry, wall and floor finishes, and hardware should be preserved and retained, repaired, or closely match the original to retain integrity that represents the historical significance on the interior of the stone houses, especially when documentary evidence and specifications are provided. (See Appendix V: Original and Previous Drawings). It is recommended that compliance for successive rehabilitations be more sensitive to the historic fabric as to not lose the historic feel of the houses. This can easily be accomplished while still rehabilitating and improving the performance of the buildings.

- The **kitchen cabinetry** is being replaced as part of the House 31 rehabilitation, due to the existence of lead paint. The kitchen layout plans in House 31 have been altered from the original and extra cabinetry will be added on other kitchen walls. In the other houses, it is important to follow compliance and retain the kitchen layout, as it is significantly character-defining of the interior. The cabinetry dimensions and drawings for Houses #28 and #30 have been provided as examples in this report. If additional cabinetry is to be installed where it historically never was, this should be compatible with, yet differentiated from the original design so as to not confuse history. A more modern appearance with simplified details may be sufficient. The historic cabinetry should be replaced in kind.

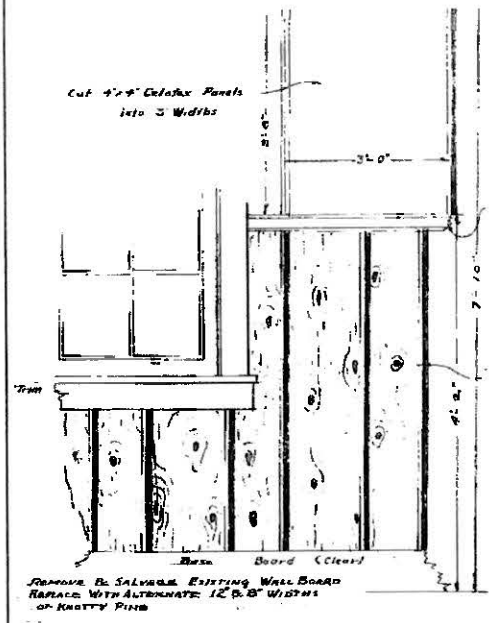
- **Beadboard** or "V"-Board may inadvertently provide structural support in the buildings, as was illustrated during its removal House 31. When the beadboard was being removed, the roof began to sag. It appears as though this material had unintentionally acted as a structural membrane against the rafters. It functioned as one unit, and when it was removed in pieces, the structure began to fail. It is necessary to be aware of this possibility and use extreme caution when removing similar surfaces in other buildings.

House #30 Kitchen Cabinetry (same as what was in #31)

- **Knotty Pine** was installed as part of the 1939 renovations and likely still exists in some parts of the houses, such as the painted paneling in the kitchen of #30. The drawings indicating this aesthetic addition do not specify whether or not to paint the knotty pine, but by the detailed illustration of the wood grain, it can be presumed that William G. Carnes, Chief of Planning in 1938, intended for the wood to be left unpainted.
- **Celotex Fiberboard** was specified in the original drawings for the 30s series stone houses and is still evident in some of the kitchens. **Homasote** is a sustainable alternative to celotex. Made primarily of 100% recycled paper, this product has very high insular qualities, moisture, fungal, and insect resistance, and can be painted as a surface



Knotty pine still exists in the kitchen, with celotex fiberboard above. The knotty pine has been painted since its installation. The picture mould, H-1010, is still in production and can be found at local lumber stores.

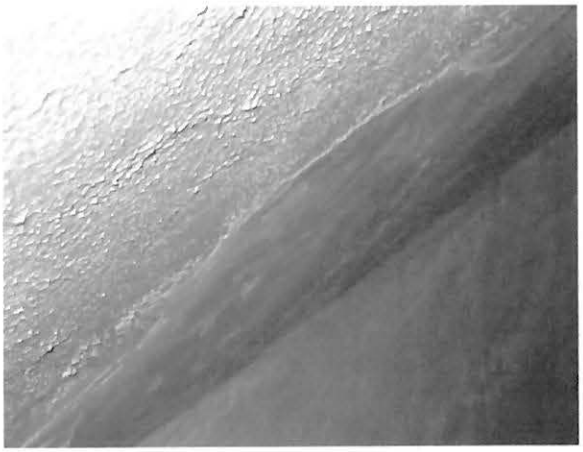


1939 specifications for Knotty Pine (CRLA Museum & Archives)

material.[15] This material could effectively improve the insulation in the stone houses without having to remove the existing wall structure and still maintain the historic appearance of the original materials. Homasote is not a new product, but was used as early as World War I as a reliable building material. It is fire resistant, but not sufficiently to meet current codes. Crater Lake National Park has the ability to clearly explain and defend its construction methods against code, and preserving character-defining historic fabric in a National Historic District is usually a plausible and adequate justification. Additionally, Oregon Caves National Monument is currently experimenting with other ways to mimic Celotex in the chateau with a special treatment of drywall. This option, with the advice and feedback from Oregon Caves, should also be considered.

- **Picture Molding** is found in the kitchen set above the knotty pine panels. This design, referred to as H-1010, is available at Cashway in Klamath Falls, Oregon and can easily and inexpensively be replaced as part of the interior restoration and rehabilitation.
- The **lath and plaster** has some evidence of deterioration, cracking, and spalling. In rehabilitation projects, this interior finish work is often changed out for more modern drywall materials and techniques. However, the existing lath and plaster in House #28 (and likely others in the 20s series) serves as a valuable example of traditional craftsmanship that is character defining and should be restored and preserved.
    - All plaster work should be completed by a professional trained in this specialized skill. The Oregon State Historic Preservation Office (SHPO) can recommend skilled contractors to perform quality repair or replacement work.
    - There is evidence of **plaster patchwork** in House #28 that appears to have been done incorrectly. According the NPS *Technical Preservation Series* Brief #21, three coats of plaster are necessary for maximum strength and durability, and also

Cracked and spalling plaster on ceiling



Incongruent smooth plaster patchwork next to properly textured plaster with added aggregate

[15] Ecohaus Company website. Accessed 8/17/09 <http://www.ecohaus.com/P-0380400005408/Homasote+Super+440+4x8x1%2f2>

to match the historic application. The first two coats, the scratch coat and brown coat have "coarse stuff," such as sand or another aggregate. The third and final coat, referred to as the "setting stuff" is a finish plaster, high in lime putty with very little aggregate, to give the surface a smooth white finish. In patching large cracks, it is necessary to remove the historic plaster down to the lath, clean the debris, reapply metal lath and patch the crack or deteriorated area with the three coats discussed above. The patchwork in #28 may have skipped the "coarse stuff" coats, as there is very little texture to the surface, causing it to conspicuously stand out from the historic material.

- **Small cracks** in plaster are not a serious concern, but can be repaired by slightly widening the crack and filling with a premixed patching material. **Larger cracks** are a sign of structural instability or water damage. It is necessary to repair the cause of the crack first, and then repair the plaster in the more detailed method discussed above and also in the Preservation Brief. Once dry, the patch area should be sanded and wiped clean before being sealed with primer.[16] The cracks and spalling in the west bedroom of House #28 are sizable and in considerable need for repair.
- If a plaster ceiling is in **substantial disrepair**, the keys holding the plaster in place can be replaced or new lath and plaster can be applied over the top of the existing material. Galvanized metal is considered to be the most reliable expanded lath material in regards to longevity, stability and proper keying, but is also the most expensive. An alkaline-resistant primer is recommended to use when painting new modern lath and plaster.
- If applying over the top of existing plaster, preservationists need to ensure that the "**reveal**" around the windows and door trip remains the same as before.
- **Veneer plaster** is a method of retaining the appearance of historic plasterwork without the expense or wait associated with the traditional practice. This application uses gypsum core "blue-board" panels, the same 4'x8' size as modern drywall, that are covered in a paper that is surfaced with gypsum crystals. These panels are installed over furring strips or old wood lath walls and ceilings. In poorly insulated masonry structures like the Munson Valley stone houses, insulation can easily be added between the furring strips. Once the panels are installed, the joints are to be taped with fiberglass mesh. Only two coats of plaster are needed, a 1/16" coat of high-strength veneer plaster, and an additional coat of veneer or a gauged lime finish coat. Veneer plaster has a 1500 psi rating and is quick drying, structurally resilient and durable, and when properly

[16] Natalie Shivers, *Walls & Molding: How to Care for Old and Historic Wood and Plaster* (New York: John Wiley & Sons, Inc.), 1990.

troweled, the surface looks very similar to historic plasterwork.[17] If, when rehabilitating the stone houses, the walls need to be gutted, veneer plaster is strongly recommended over replacing with modern drywall. This method retains the historic appearance of the lath and plaster and honors the historic materials and craftsmanship from the historic district's period of significance.[18]

- The Clear Vertical Grain (CVG) **Douglas Fir flooring** in House #31 was intended to be replaced in kind, as the compliance document states. However, it has been since suggested that snap panel wood laminate become the new flooring throughout the majority of the house, while the stairs will be carpeted. Snap panel has been substituted because is meant to look like wood but supposedly requires very little maintenance. Upstairs, the existing fir floor is extant under the asbestos tiles, which is also planned to be covered with the snap panel. The abatement crew attempted to remove these tiles, and expose the wood, but the glue originally used would not separate, and it may have severely damaged the wood to continue with this process. For preservation purposes, restoring or reconstructing the original fir floors is ideal, especially because the compliance document indicates this, but it may not be the most cost efficient up front. Based on the condition issues in the other houses, it is strongly recommended to preserve and restore the original, long lasting wood flooring that can be re-sanded and re-finished as opposed to laminate which has a much shorter life expectancy and cannot be refinished. Also, the environmental conditions at Crater Lake National Park and the potential exposure to moisture should be strongly considered in regards to the reaction and performance of the chosen flooring material. If the original wood cannot be restored, both of the previous flooring layers should be left underneath the modern material flooring so that the history of the building can be examined and understood in the future.
- All **hardware** should match that of the 1930s era. This period of hardware is still manufactured in various styles and can be easily purchased at hardware stores or salvage companies. (See Appendix VI for a collection of hardware images from Houses 28 and 30 and Appendix II for a list of local salvage suppliers).

Windows & Doors (Fenestration)

- **Windows** are most often the source of conflicting conversations between the Preservation and Sustainability movements. On one hand, windows are highly character-defining and of great value in retaining the historic essence of a building. On the other hand, old, deteriorated windows with low R-value are a frequent cause of lost energy. As technology advances in both fields, this issue must drive future solutions that meet the

[17] Mary Lee MacDonald, "Repairing Historic Flat Plaster Walls and Ceilings" in *Technical Preservation Series: Preservation Brief 21* (National Park Service, U.S. Department of the Interior), Oct 1989. Accessed 8/11/09 <http://www.nps.gov/history/hps/tps/briefs/brief21.htm>

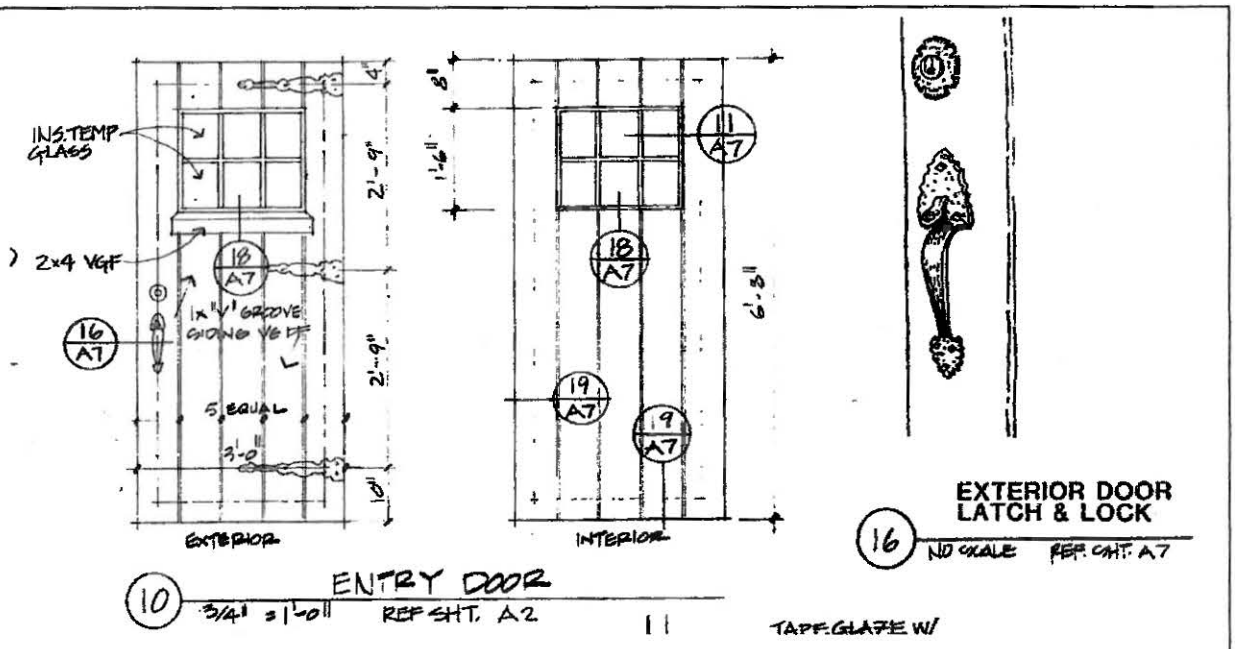
[18] Shivers, 1990.

Secretary of the Interior's Standards for Rehabilitation. For now, it is important to recognize the reversibility (or lack there of) of replacing character-defining historic windows. If the windows are severely deteriorated and must be replaced, it is important to be detail-oriented in several aspects of design. Smith recommends that "the new windows, of either wood or metal, should closely match the historic windows in size, number of panes, muntin shape, frame, color and reflective qualities of the glass." Regardless, any solution in the stone houses must be compatible with the original wood or steel windows. See the *Winterizing* section for recommendations on shutters and storm windows. For House #31, the wood casements were repaired and the wood window frames were rebuilt for added structural support, especially in the dormers. It is recommended that this practice continue for the wood windows. The steel casements in the 20s series are to be repaired and preserved as well.

- **Doors:** None of the stone houses retain their original wood paneled **doors** that had iron strap hinges and a small window. However, if the original doors are not to be replicated and the current doors, historic or not, are in good condition, there is little reason to replace them for energy efficiency purposes. According to Smith, "Most historic wooden doors, if they are solid wood or paneled, have fairly good thermal properties and should not be replaced, especially if they are important architectural features. Assure that the

Original wood door at Ranger Station, typical design of doors design the historic district.

The window frame is composed of several members and all details should be carefully noted and reproduced if windows are rebuilt



Entry door details and measurements from 1992 Details of Stone House 25. See Appendix V for more details. (Drawing from ETIC files)

frames and doors have proper maintenance, regular painting, and that caulking and weather-stripping is applied as necessary."

- If the doors are to be replaced as part of the rehabilitation, a reconstruction of the character-defining historic doors with the iron strap hinges would tremendously improve the buildings' architectural integrity. This replacement can also be justified by improving insulation, using long-lasting materials, and valuing high quality craftsmanship. One window, like on the main doors on Houses 19 and 20, might be sufficient.

Lead & Asbestos

- **Lead-based paint** was found in the kitchen cabinetry and several of the built-in closets and cupboards in House #31 and is likely in the other stone houses as well. In House #31, the kitchen cabinetry was removed to abate this problem. OSHA has strict regulations for training and removal of hazardous materials, but does not specify that the complete removal of the painted material is required.[19] Especially because these houses are contributing resources to a historic district, other options are to be considered before completely removing historic materials.[20] It is recommended that the lead paint be removed with wet hand scraping and sanding, a low temperature (below 750-degrees)

[19] Mark Peterson, ed., "Working with Lead-Based Paint" (Oregon OSHA and Department of Human Services), 2005. (Accessed 8/25/2009). <www.oregon.gov/DHS/ph/leadpaint/.../oshaworkingwithleadpaint.pdf>)

[20] Sharon C. Park & Douglas C. Hicks, "Appropriate Methods for Reducing Lead-Paint Hazards in Historic Housing," in *Technical Preservation Series: Preservation Brief 21* (National Park Service, U.S. Department of the Interior), April 1995. (Accessed 8/25/2009). <http://www.nps.gov/history/hps/tps/briefs/brief37.htm>

heat gun, chemical paint stripper, or a power sander, grinder, or saw with a special shroud and HEPA vacuum exhaust to control the material.[21] If the space is kept clean during abatement, the cabinets can be re-painted with a non-lead-based paint to solve the issue without the costly and timely expense of reconstructing new cabinetry and destroying character-defining historic fabric.

- **Asbestos tiles** have been used to cover the wood floor in several of the stone houses, including #31. The recommended options for abating this hazardous material involve removing it (likely with heat, scrapers or saws) or covering it. The tile was removed in House #31, exposing the wood floors, even though the recent intention of the project lead was not to restore the wood flooring (see *Flooring* section for further recommendations). The tile would need to be removed if the original wood flooring is to be restored.

Pest Control

- **Rodents** infest the stone houses on a regular basis. Previous park work orders, along with current residents' testimony suggest that there are several holes and cracks in the houses where insects and rodents can enter the buildings. As the mortar has deteriorated over the years, there are likely additional cracks and openings for unwanted pests. The houses should be inspected during their rehabilitations for such openings and plugged as necessary.

- **Carpenter Ants** are evident in several of the stone houses and can be very destructive to wood buildings and structures. They may be chewing through the wood while constructing their nests, or are possibly just foraging in the houses from their outdoor colonies. Also, an infestation of carpenter ants is a likely sign of greater moisture issues, as they nest in soft, saturated wood. Certain parts of a building, around and under windows, roof eaves, decks and porches are more likely to be infested by carpenter ants.[22] To solve this problem, it is best to find and treat the colony. A simple way to find the colony is to put out some diluted honey as bait and then follow the carpenter ant back to the colony, or wherever it disappears into a crevice or behind a wall, and then squirt a dry poison into the colony with a narrow-nosed bottle or turkey baster. Within a national park, there are strict regulations on the chemicals that can be used for such treatments. Boric acid or diatomaceous earth are two environmentally safe options, but it is best to consult a material hazards expert before treating any infestations. Follow up by repairing any leaks or moisture issues that deteriorate the wood and provide inviting habitat for carpenter ants.

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[21] Peterson

[22] University of Nebraska Lincoln website for Carpenter Ant Management, accessed July 30, 2009. < http://lancaster.unl.edu/ pest/ resources / carpant004.shtml>

Landscape

Sorbus sitchensis (**Mountain Ash**) is planted in close proximity to all six stone houses. Several of these landscape shrubs are overgrown and crowd the houses, trapping moisture, creating rodent habitat, and the encroaching root systems could potentially compromise the building structure. Roots were found on the inside of the foundation of House #31 during its crawlspace excavation. The Mountain Ash, however, is one of few surviving species from the original landscape design that park specialists are currently working to restore. These shrubs were planted over seventy years ago at the corners of the buildings to aid the rustic architecture style by creating an illusion that the stone houses emerge from the landscape. Albert H. Good suggested that subtle "introduction of vegetation along the foundations gracefully obliterate the otherwise unhappy line of demarcation between building and ground."[23] Currently, the plants appear to have grown larger than what was intended and should be pruned to a smaller size. Overall, careful consideration should be taken to determine a solution that protects and preserves both the historic fabric of the buildings and of the landscape design. Some options include:

- Prune the shrub to no more than 3-feet tall and wide.
- Prune the roots to limit the sub-surface threats to the structure.
- Re-plant the shrubs at a farther distance (three to five feet) from buildings as opposed to their current placement right next to the stone cladding.

Mountain Ash tightly planted against stone base

Historic photo showing shrubs at approximately three feet tall and wide (CRLA Museum & Archives)

[23] Good, 6.

Rehabilitation Plan- Stone Houses #24, #25, #28, #30, #31, #32

Building #31 was chosen for rehabilitation because of its water damage, structural deterioration, and other deferred maintenance issues. It can be presumed that, because of the similar age and setting of the other five stone houses, the conditions of all six are in similar disrepair. The in-process evaluation of Building #31's rehabilitation is intended to develop a preservation plan for the successive rehabilitation of the other stone houses, buildings #24, #25, #28, #30, and #32. The following list outlines some of the specific tasks involved in the overall rehabilitation project.

- Installed new concrete pier foundation and concrete stemwall foundation. Stemwall was attached to deteriorating masonry foundation with rebar.
- Excavated crawlspace by an additional foot and added insulation below flooring.
- Installed new floor joists and sub-flooring to bottom floor
- Added additional 2x10 floor joists to second floor
- Added additional headers over existing doors and windows
- Reinforced original rafters with plywood trusses and additional 2x8 rafters
- Added 4"x6" wood members to dormers for added structural stability
- Replace wood flooring (2010)
- Finish walls with beadboard wainscot and drywall
- Added bat insulation wherever possible (under floor joists, in walls, and in roof)
- Rebuilt new wood doors
- Refurbished historic windows by retaining casements and panes, but installing new window frames.
- Upgraded plumbing and fixtures with copper pipe
- Refinished and re-installed historic cast iron bathtub
- Installed fire sprinkler on interior with French drain system on exterior
- Stabilized leaky stone chimney
- Retained original floor plan, but slightly reconfigured kitchen
- Rebuilt kitchen counters and cabinetry that had been treated with lead paint.
- Adjusted stairwell by adding a 45-degree step on landing
- Replaced electrical wiring and fixtures
- Upgraded HVAC system with cadet heaters, subfloor fan, and rafter vents
- Repointed masonry joints on both interior and exterior
- Project is unfinished as of September, 2009 and will require additional funding and labor to complete during the 2010 season.

Evaluation of Building #31 Rehabilitation

Condition issues of the greatest concern deal with ventilation and moisture infiltration. Mold is a direct result of these problems. Asbestos and lead abatement are also cost- and time-laden expenses that each house's rehabilitation will need to face in some form or another. Structural stabilization likely needs to occur in every house, especially to support the heavy snow loads. However, not every building may need to be gutted on the interior to achieve a successful rehabilitation. Below are some ideas to consider when planning and budgeting for future rehabilitations.

- 20s series may have stronger dormer structure than 30s series
- The floors and foundation may not be rotten in every house (crawlspace excavation may be more difficult though)
- The cabinets could undergo safe lead-paint removal instead of replacement
- Abatement training has already been conducted
- Saws and other tools have already been purchased
- A more attentive maintenance plan may prevent future critical issues (i.e. flashing around chimney and leaking roofs)
- Proper winterization may prevent future critical issues (i.e. prevent mold with improved ventilation)
- More durable materials, although possibly more costly upfront than cheaper materials with shorter life span, will save the park in continual maintenance and replacement costs in the future.

The issue of communication appears to be in need of improved attention and commitment. Stairs had to be rebuilt twice, historic shrubs were removed, and unclear decisions were made about finishes without clear planning and dialogue among all parties, including maintenance, the historian, compliance, and administration. It is a goal that this document, along with retrospective analysis and evaluation of House #31's rehabilitation process, will lead to more effective communication, planning, and decision making in the future.

New concrete pier and stem-wall foundation

New floor joists to replace rotten flooring system

Cost Feasibility

$265,000 was budgeted and authorized for the 2009 rehabilitation of Stone House #31, although additional time and funding will be necessary to complete the project in 2010. As this project concludes, financial analysis and evaluation of materials, labor, and contracts will provide valuable information for similar rehabilitation projects of the other stone houses in the future. It can be presumed that, because of environmental conditions, many of the same issues found in Building #31will be discovered in the other stone houses. In many cases, specific expenditures, such as new HVAC systems, plumbing upgrades, etc., can be extrapolated into future budgeting. However, not all of the stone houses may be in need of the complete interior overhaul that Building #31 experienced. It is imperative to ask what key issues exist and effectively set priorities that are cost efficient to the park. The expense of each building's rehabilitation will depend on its condition and previous maintenance history. The condition and upkeep of the roof and the foundation are likely the strongest factors that will determine the extent of each building's rehabilitation needs.

An essential recommendation for project budgeting is to plan for prolonged cost effectiveness instead of largely considering only the immediate value saved. It is imperative to understand that the cheapest option may not necessarily be the most cost effective. For example, choosing cheap wood laminate flooring with a short life span may provide immediate cost savings but will likely generate future expenses in impending repair and replacement. Whereas removing the asbestos tiles and restoring the existing wood floors may cost slightly more upfront, especially if the project includes asbestos abatement, but will in effect provide a more durable and sustainable floor material that better preserves the historic fabric of the building.

Note, unless there is damage to the foundation, crawlspace, or a substantial part of the floor, it is likely not necessary to remove or "gut" the entire interiors of the buildings to successfully rehabilitate them for improved comfort and energy efficiency. This would save substantial resources in time, materials, cost, and unnecessary demolition waste.

Although all the stone houses need rehabilitation work, Buildings #32 and 30 are high priorities for building rehabilitation, due to their poor ventilation , water damage, and similar construction (likely with similar structural problems) to House #31. PMIS has already allocated funds for the future rehabilitation projects on the stone houses. It seems unlikely that similar projects should increase by as much as $100,000 in two years and by as much as $164,000 in three years, especially when the planning, training, and equipment purchasing has already been accomplished.

Historic Stone House	Year	Amount Funded
#24	FY 10	$ 304,750.00
#32	FY 10	$ 265,000.00
#25	FY 11	$ 365,000.00
#28	FY 12	$ 429,000.00
#30	FY 13	$ 429,000.00

Compliance & Sensitivity to Historic Fabric

Because these buildings are contributing resources to a historic district, compliance must be carefully adhered to in preserving the historic character of the area. Several details must be closely examined, retained, or replicated to preserve this character. This list is suggestive of issues requiring close attention and compliance, but is by no means exhaustive of all compliance concerns.

- Retain all exterior materials, appearance, and design
- Match window materials and details (muntins, # of panes, shutters)
- Match mortar in strength, porosity, aggregate, and color
- Cabinetry dimensions and design. New, added cabinets are to be differentiated from old.
- Retain original Floor plan
- Replace wood floor in kind as compliance document specifies. Do not use laminate.
- Interior finishes (lath and plaster, beadboard, wainscot, knotty pine, flooring, hardware)
- Retain evidence of and access to passive refrigeration system for interpretation
- Do not build additions that negatively impact the historic fabric. Install temporary snow tunnels with caution.

The National Register nomination describes previous rehabilitation plans as retaining the exterior integrity of the buildings but "continuing the pattern of interior alterations which have been made over the years to modernize and winterize structures originally designed for summer seasonal use only."[24] Although this may be perceived as allowing for further alteration in the interior, it is important to evaluate how this will affect the overall integrity of the district. The nomination also determines that, in rehabilitating other buildings in the historic district, replacement of materials has been done in-kind. It is important to closely evaluate how the current rehabilitations of the stone houses will follow this lead. The necessity to remove, repair, update and rebuild the entire interior of a house because of damage caused by deferred maintenance is not an opportunity to redesign a building in a historic district. Certain adjustments must be allowed, such as the addition of a diagonal stair step to prevent head injury, but it is not an invitation to leave a modern legacy of materials or a reconfigured kitchen design that confuses history, especially when evidence of the original specifications is readily available. These buildings have been determined to be historically significant to the period of 1925 to 1949, and their appearance should, to the best of the park's abilities, be reflective of this era as part of agency policy and the Secretary of the Interior's guidelines.

[24] Cheryl Mortin (draft) & Stephanie Toothman, *Historic Resources of Crater Lake National Park* (National Register of Historic Places Nomination: National Park Service) 1988, Section 7, p.1.

Opportunities for Interpretation

The research, time, funding, and rehabilitation work are ultimately being put into the stone cottages to preserve these historic resources for the future and share their legacy with park staff and visitors. Interpretation of various features may provide added value of the houses for its occupants, stimulating more attentive observation and care of these buildings.

- Decorate the interior walls with matted and framed prints of historic photographs or the original architectural drawings and plans for the houses. This is relatively inexpensive and would provide added interest to the interiors and convey the building's historical design and significance.
- Share who lived in the houses. Provide an address and name sign by the front door with one or a few historic residents' names along with their dates of occupancy, followed by the current resident's name/s, as a way of connecting the present user to those of the past. This would obviously need to be inexpensive and somewhat temporary, as the occupants would change seasonally. A waterproof frame with printed paper would likely survive each season.
- Place a small framed sign explaining the passive refrigeration system on the inside of the kitchen corner cabinet door.

Sustainable Practices

There are varying opinions about the balance of preserving historic structures exactly in place and incorporating modern building practices. The underlying dialogue is often about a balance of resources, materials, and the cost of labor skilled in traditional building practices. Albert Good witnessed a change in traditional building practices and craftsmanship in 1938 that is similar to what the industry continues to experience in regards to this dialogue. "There are not at hand today the timber resources of pioneer days, that to insist on the use of logs in today's park structures in the spendthrift fashion of our forefathers may be logic in the aesthetic abstract, but in practice wastes those resources the conservation of which largely motivates park expansion."[25] It is imperative to be and resourceful and aware of the locally available craftsmanship, materials, and funding that best serves the park service without compromising the goals of preservation and rehabilitation.

The National Park Service is in the practice of conserving our nation's natural and cultural heritage, and is obligated to carefully spend tax dollars in ways that will benefit the country for years to come, and our impact on the environment cannot be ignored. In regards to this specific rehabilitation project, there are several options for sustainable material alternatives that would maintain the same appearance of the original materials. If the historic fabric will be removed due to poor condition, more eco-friendly materials should be considered for replacement. Ecohaus is one company in Portland, Oregon that has several products and

[25] Good, 4.

solutions for recycled materials that are similar in appearance to the historic fabric, low VOC materials, and improved energy efficiency. In addition, there are several organizations in Oregon that specialize in salvaging and repurposing used and historic materials. See below for a list of sustainable practices that can easily be employed in rehabilitation ventures. Appendix II has a directory of suppliers, contractors, and resources that would benefit this and other future projects. Listed below are a few materials and ideas that promote sustainable practices.

- Homasote is a recycled material that has a similar appearance to Celotex fiberboard.
- Use low VOC paints for fewer toxic emissions.
- Natural hydraulic lime is a natural, sustainable product and can be used with blue-board or in the traditional method of applying lath and plaster.
- Use other national forest service lands or parks as resources for historic materials that are no longer being used or fallen trees to make shakes. Prospect Ranger District is one nearby example. Reuse and repurpose wood whenever available. Quality old growth wood should never be discarded, no matter what.
- Consider The Rebuilding Center, BRING, Morrows, Hippo Hardware, or other salvage organizations to repurpose used materials and hardware that match the period of significance.[26]

Conclusion

The original intentions of the stone houses and the overall rustic style architecture were ingrained with the philosophy of using native materials and design that is unobtrusive to the natural surroundings, subversive to the environment, and appropriately designed for the existing climate. The stone houses and the Munson Valley Historic District are considered historically significant because of their successful application of these design principles. Interestingly, these traditional objectives are markedly parallel to the present-day goals of sustainable practice and environmental awareness. For reasons of not only historic preservation, but also environmental cause, the stone cottages and future rehabilitation projects in the Munson Valley Historic District should ardently follow and preserve the valuable principles of rustic architecture design.

The stone houses have withstood over eighty years of harsh winters, moisture, and wear and tear. When making decisions to gut and remove the entire interior of a building, consider the historic materials that remain in good condition and retain them as part of the building's original history. All new work and materials should equal the original in durability and quality to continue and commemorate the heritage of the park's original designs and craftsmanship.

The six stone houses share a collective identity in regards to their style, size, use, and several character defining features, yet each is slightly unique in its details, alterations, and

[26] Salvage sources can be found in the Oregon Directory for the Building Materials Reuse Association. <http://www.ubma.org/directory/oregon>

occupancies over time. The rehabilitation of these buildings should share the continual story of the stone houses while simultaneously retaining the historic fabric and modernizing the amenities. The successful balance of these goals that follow agency policies and the NPS Standards for Rehabilitation will generate a more satisfying living experience that celebrates the park's lasting heritage.

It is necessary that the entire Maintenance division be continually reminded and aware that all building and landscape work in the Munson Valley district occurs within in a nationally recognized historic district and that the Secretary of the Interior's Standards for Treatment of Historic Properties must be adhered to because of this district's designation. Three principles can be gleaned from the standards that are most relevant to the stone houses and their rehabilitations.

- Maintain integrity of character, materials, design, and craftsmanship
- Do no harm and treat with the gentlest means possible
- Repair and replace in kind

These guidelines, along with clear, open communication, and thorough planning are vital to accomplish successful and efficient projects that simultaneously value both modern building and lifestyle improvements and the importance of preserving our cultural heritage for generations to come. The following recommendations are for management to prioritize and consider throughout the rehabilitation projects.

Immediate Recommendations for House #31

- Remove newly added archway- This rehab project is not an opportunity for creative license. It is in a nationally designated Historic District and the Standards apply.
- Built-in furniture has historic value and should be retained- do not replace haphazardly
- Cabinetry should not have been removed. Consider less intrusive lead abatement practices (clean and paint over, remove paint, etc).
- Restore CVG Douglas Fir T&G flooring. It is historic and specified in compliance documents. Laminate flooring is not to be considered as an alternative option.
- Reconstruct historic doors
- Provide subtle interpretation of historic significance

Key Rehabilitation Guidelines for Future Projects

- Clearly identify intention, "customer," requirements, compliance, capabilities, and budget before starting project. Meet and make sure everyone shares the same understanding ahead of time.
- Maintain ongoing compliance and dialogue about compliance throughout project. This may require an additional position, funded through compliance and project budgets.
- Review and discuss the Secretary of the Interior Standards for Rehabilitation

- Retain historic interior finishes
- Buy known materials in advance as to not be faced with ending FY financing problems
- Assess severity of condition/deterioration before deciding to "gut" every interior. Retain historic materials whenever possible, but still make upgrades with intention to preserve buildings for 100+ more years. Determining condition factors include:
    - Ventilation (mold, insulation, heat, crawlspace excavation)
    - Foundation deterioration
    - Structural deterioration (dormers, floor joists, windows)
    - Water infiltration/leakage (roof, chimney)

Budget Planning

- Financially separate out specific components of rehab projects that both materials and labor cam be applied to. This will help immensely with future budgeting and planning.
    - Lead Abatement
    - Asbestos Abatement
    - Structural carpentry work (roof, windows, floor joists)
    - Structural foundation work
    - Masonry repointing and repairs
    - Tools, PPE, etc
    - Planning (i.e. internship to prepare HSR)
    - Interior refinishing (materials, labor)
    - Chimney/roof repairs
    - HVAC system and components
    - Cabinetry replacement (to know what would be saved by not rebuilding)
    - Fire sprinkler

Other Ideas to Consider

- Do not carpet over wood floors, but provide throw-rugs
- Seasonal vs. Permanent occupancy- Weigh out costs of plowing and heating for permanent residents against fixing deferred maintenance problems that occur from having houses closed up and uncared for all winter.
- Heat buildings to 50 degrees in winter when unoccupied to prevent mold.
- Seal the foundation from roots, rodents, and moisture by pouring an auxiliary foundation around the exterior of the building.
- Have historic mortar analyzed to understand make-up. Designate a mortar formula for all future repointing projects to be more compatible and limit "patchiness"
- Remove snow entrance on House #25
- Are there alternative shutter/storm window options

- Balance landscape restoration and building maintenance. The historic Mountain Ash is 70+ years old and is the last remaining plant species from the original landscape design for the stone houses.
    - Propagate cuttings for replanting. If replanted, allow more space (3-5 feet) between shrub and building structure while still protecting plant from weather.
    - Prune shrubs to 3 feet tall by 3 feet wide
    - Prune roots
- Remove bricked-in chimney from interior of 30s series, but retain it on the exterior. Can this structurally be accomplished? Would it help prevent roof leaks around the chimney?

Ongoing Maintenance Priorities

- Proper Winterizing
- Identify and repair moisture-deteriorated wood that becomes a home for carpenter ants (treat nest with diatomaceous earth)
- Flashing on roof, around windows, and chimney
- Repair lath & plaster as necessary
- Prime exterior wood before painting
- Have a more thorough check-in/out process with occupants, and encourage more dialogue with residents about maintenance needs.

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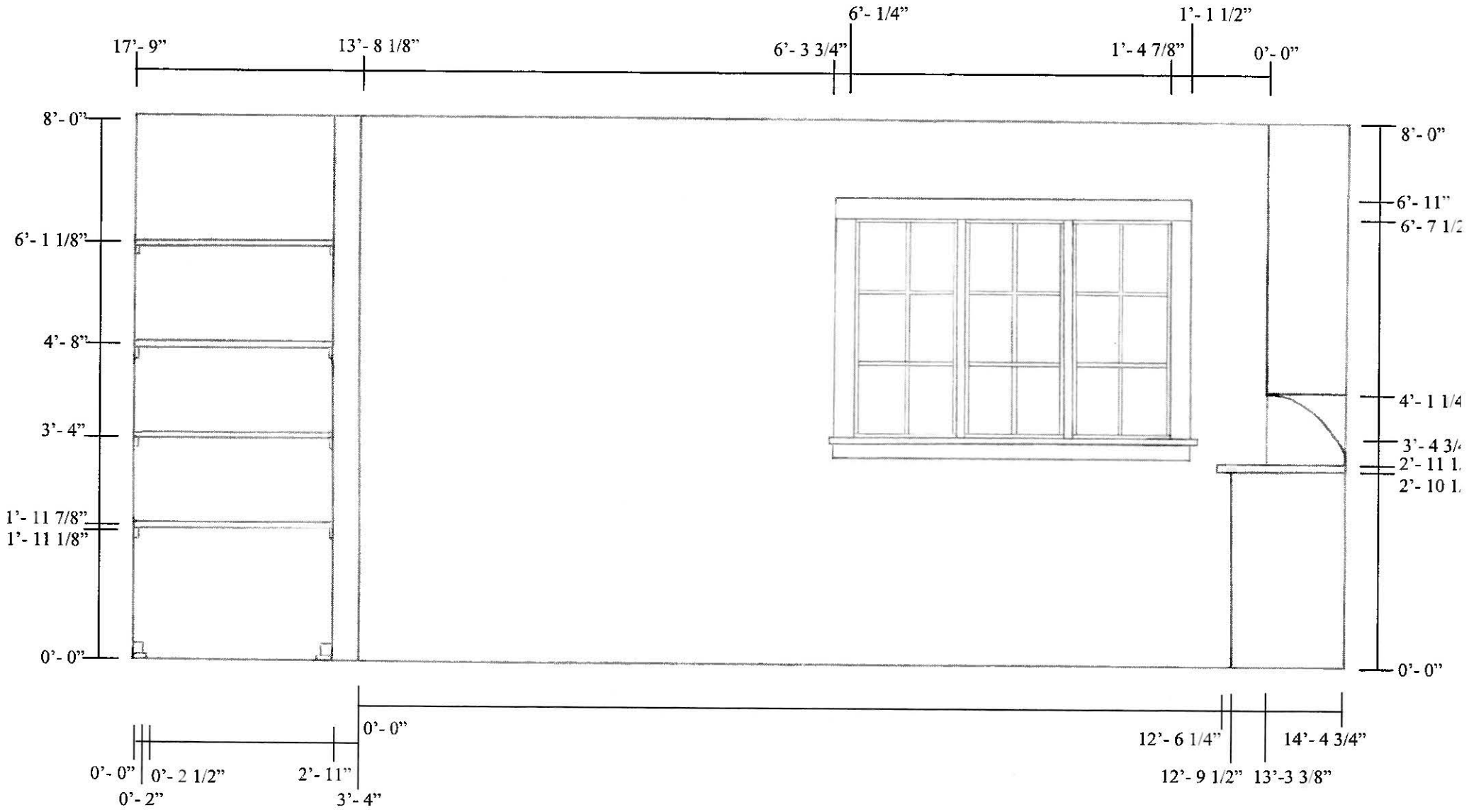
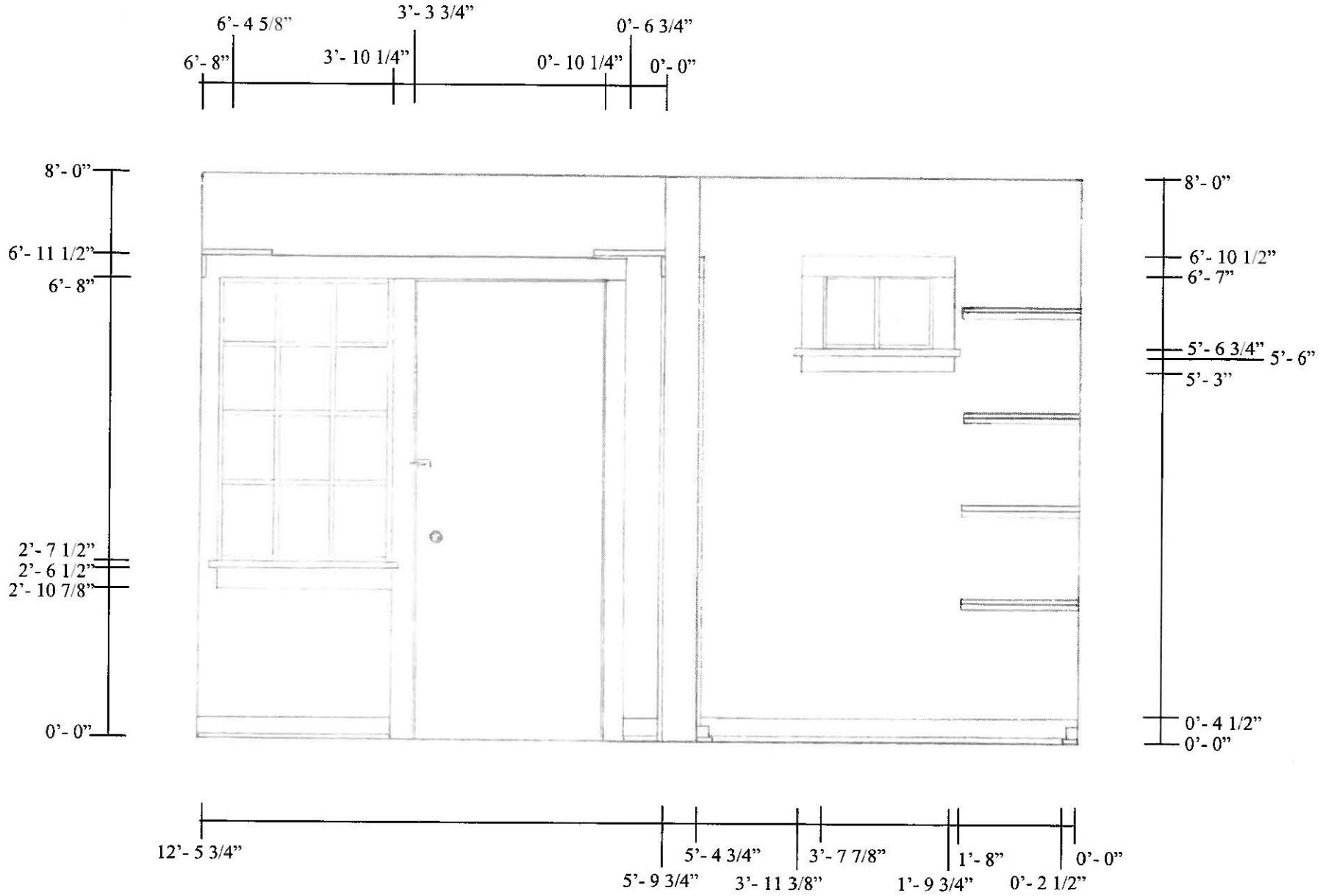


1 0 1 2 3

SCALE 1/2" = 1'- 0"

DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 2 OF 17	**KITCHEN** **EAST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



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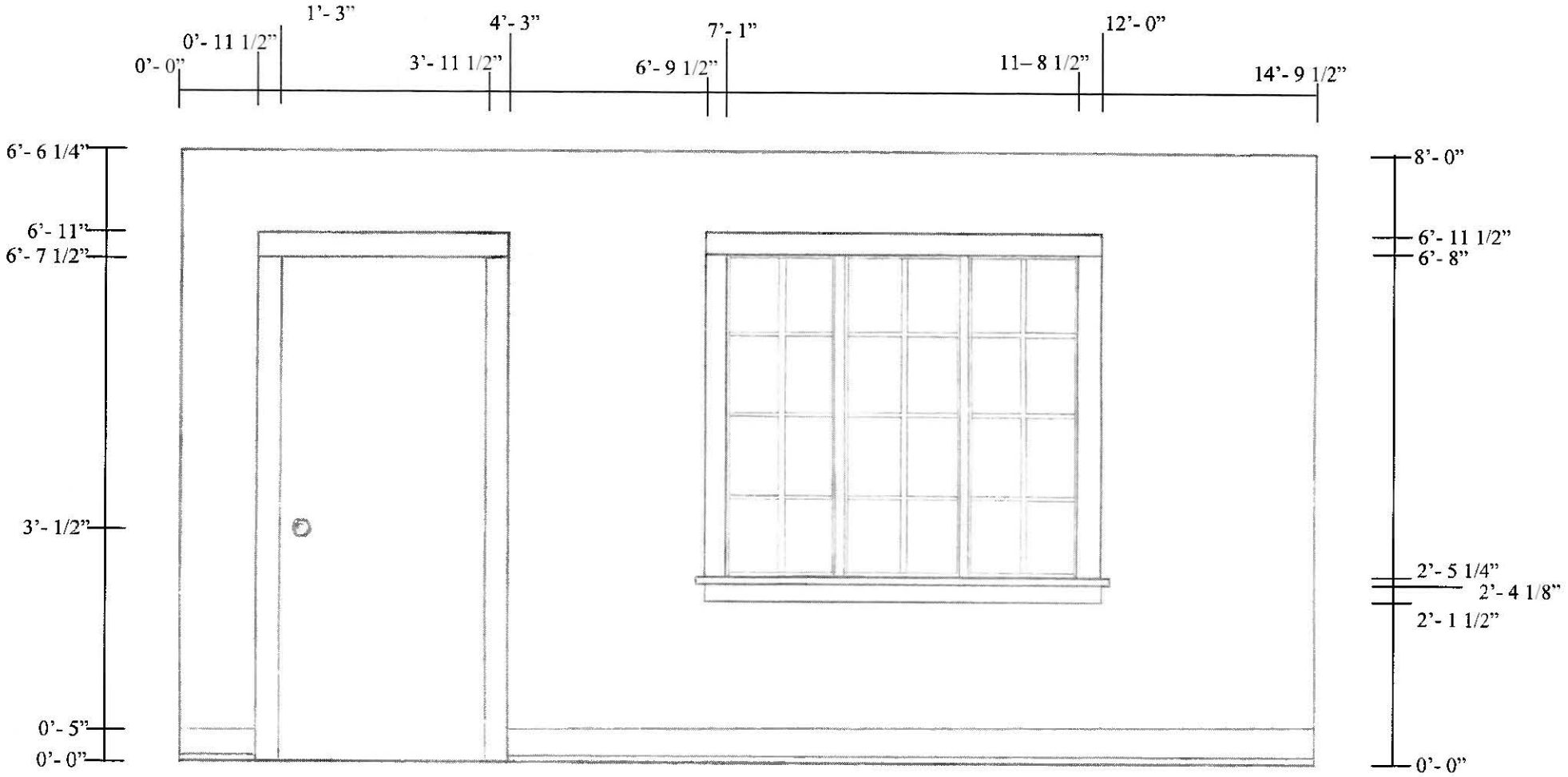
SCALE 1/2" = 1'- 0"

DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 3 OF 17	**MUDROOM/PANTRY NORTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



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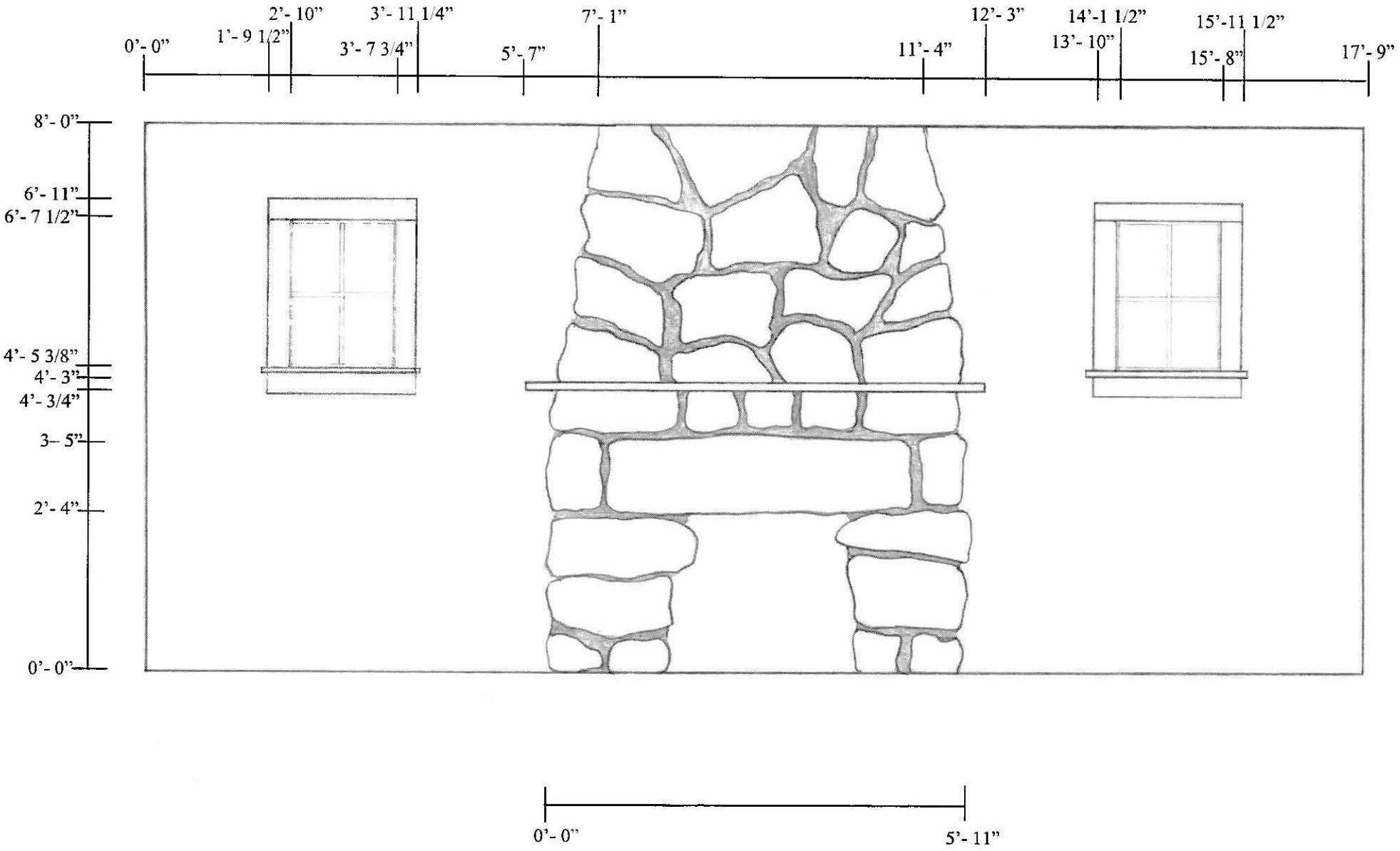
SCALE 1/2" = 1'- 0"

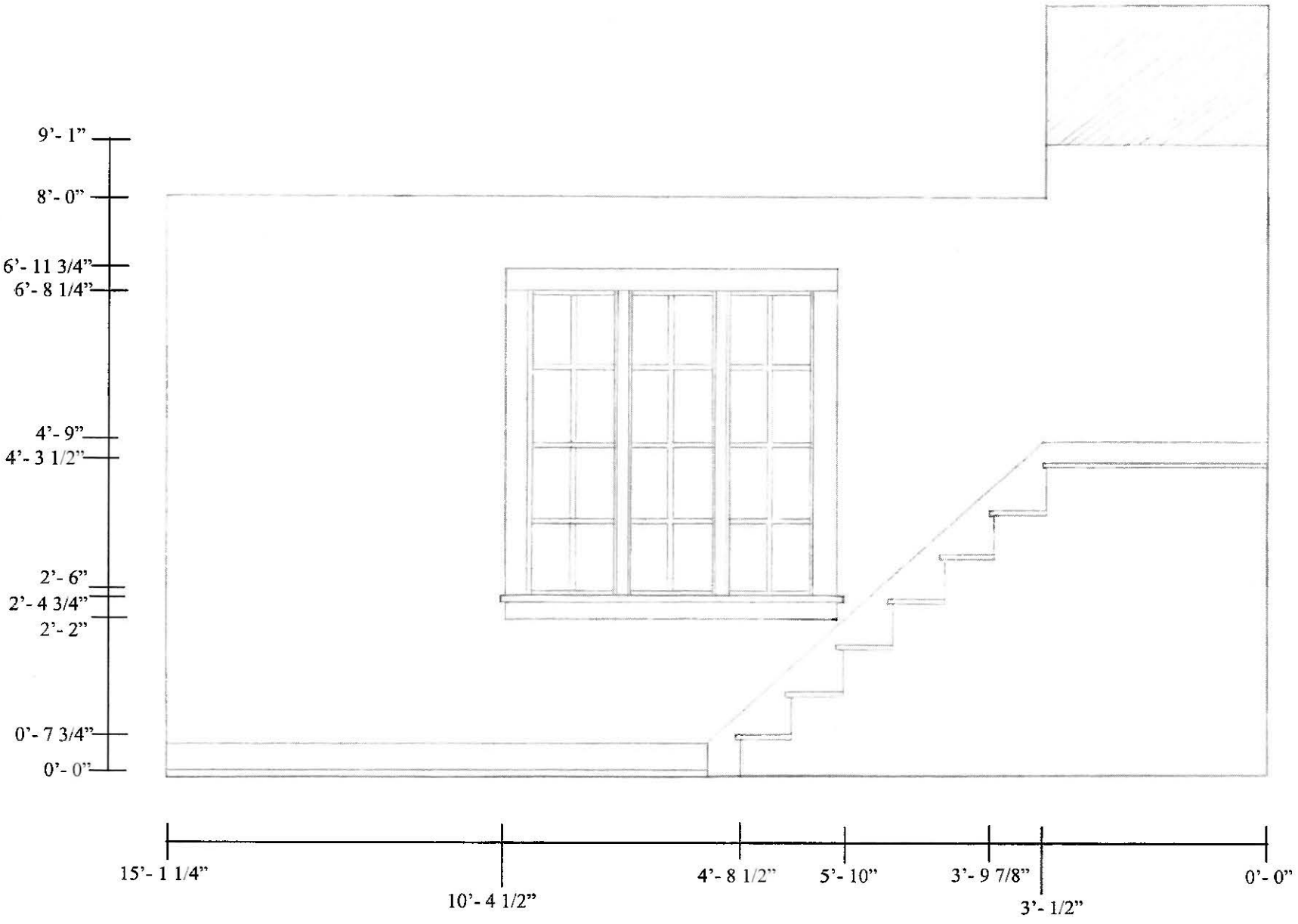
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 4 OF 17	**LIVING ROOM** **SOUTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

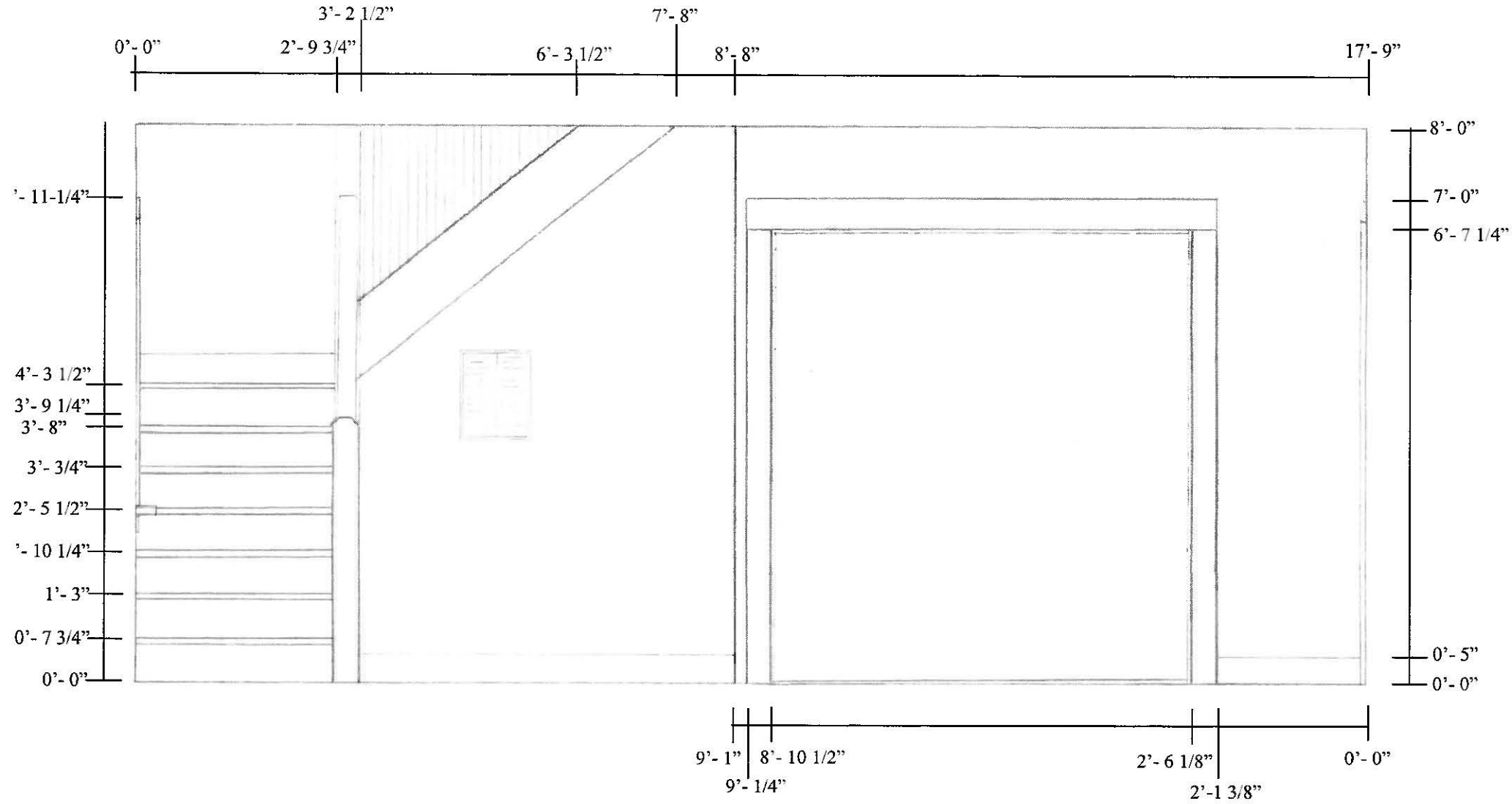
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 5 OF 17	**LIVING ROOM** **WEST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

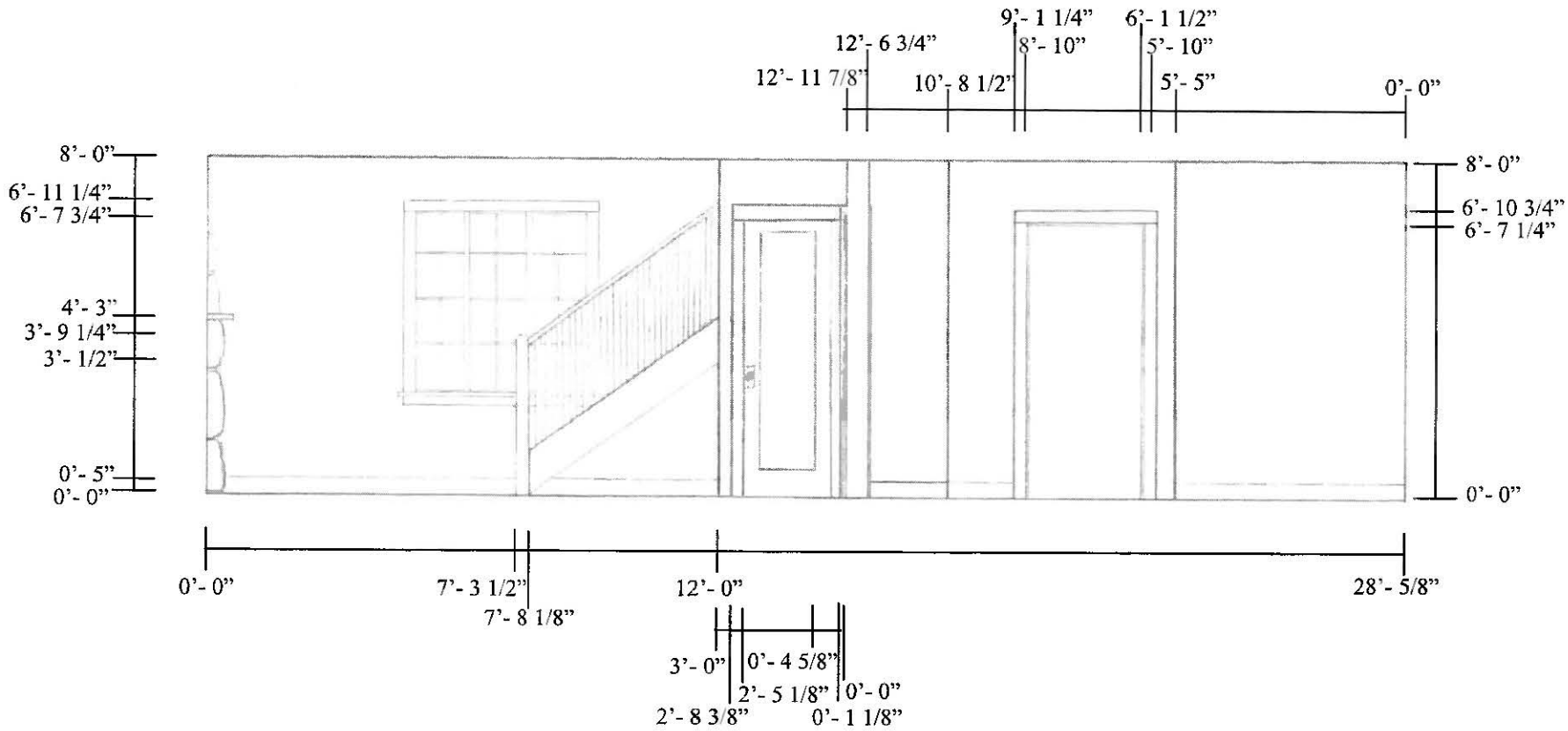
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 6 OF 17	**LIVING ROOM NORTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

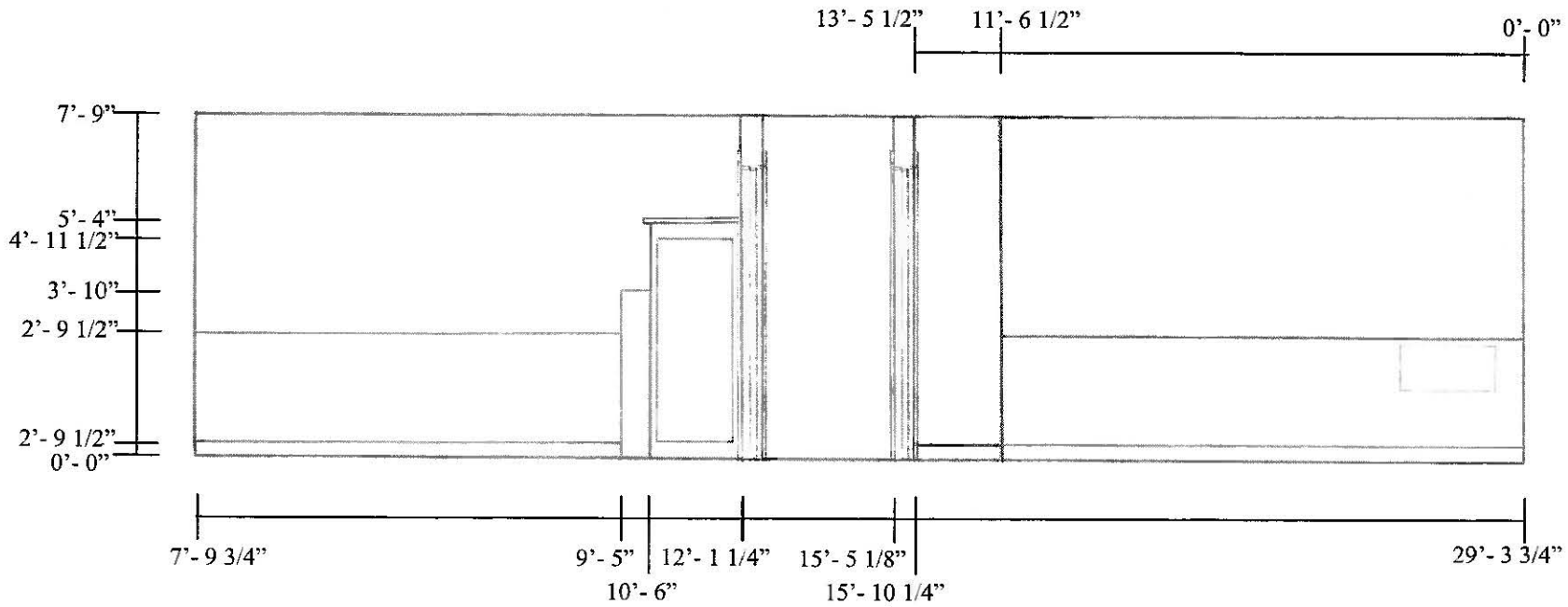
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 7 OF 17	**LIVING ROOM EAST SECTION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



0 2 4 6 8

SCALE 1/4" = 1'- 0"

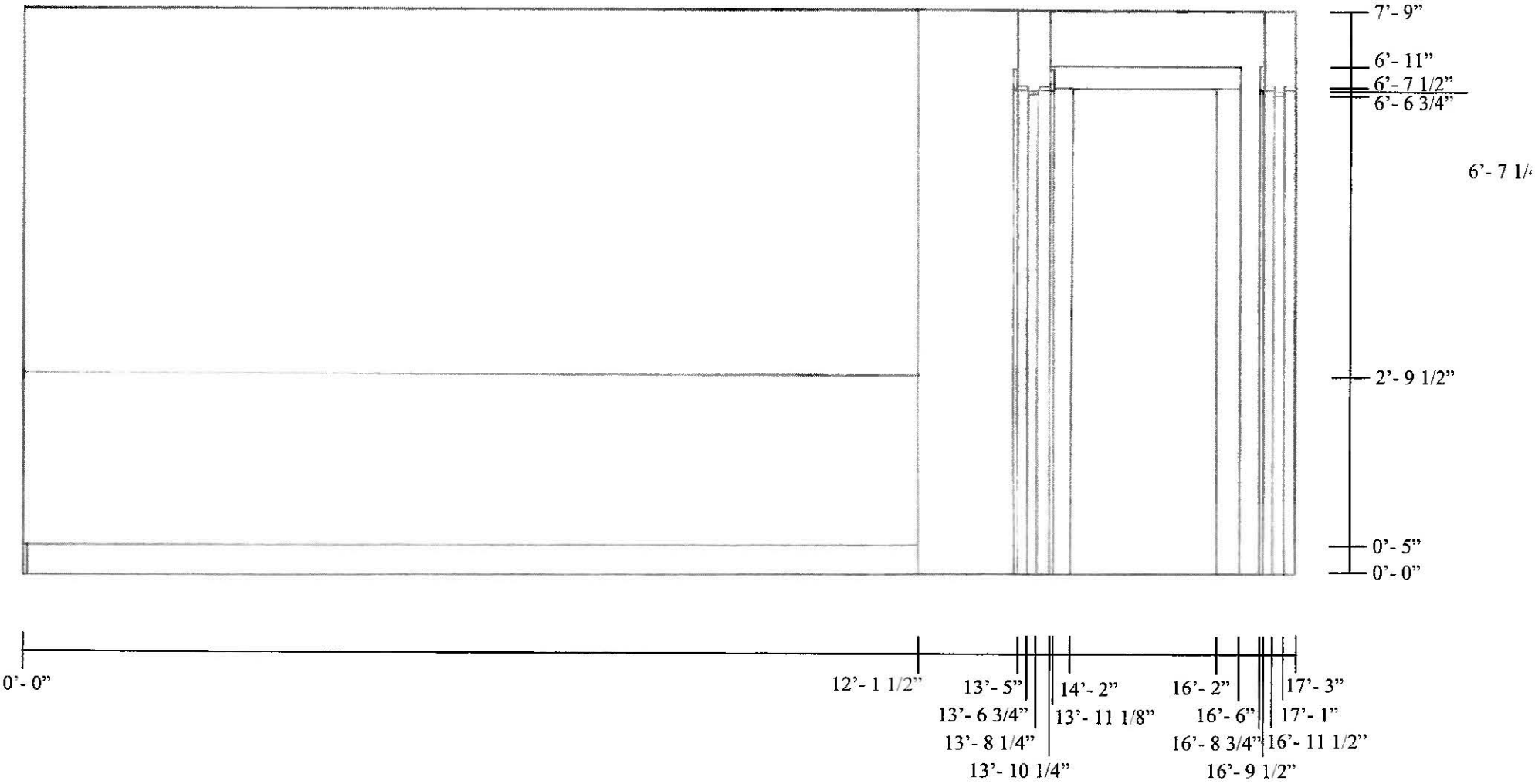
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 8 OF 17	**DOWNSTAIRS NORTH SECTION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



0 2 4 6 8

SCALE 1/4" = 1'- 0"

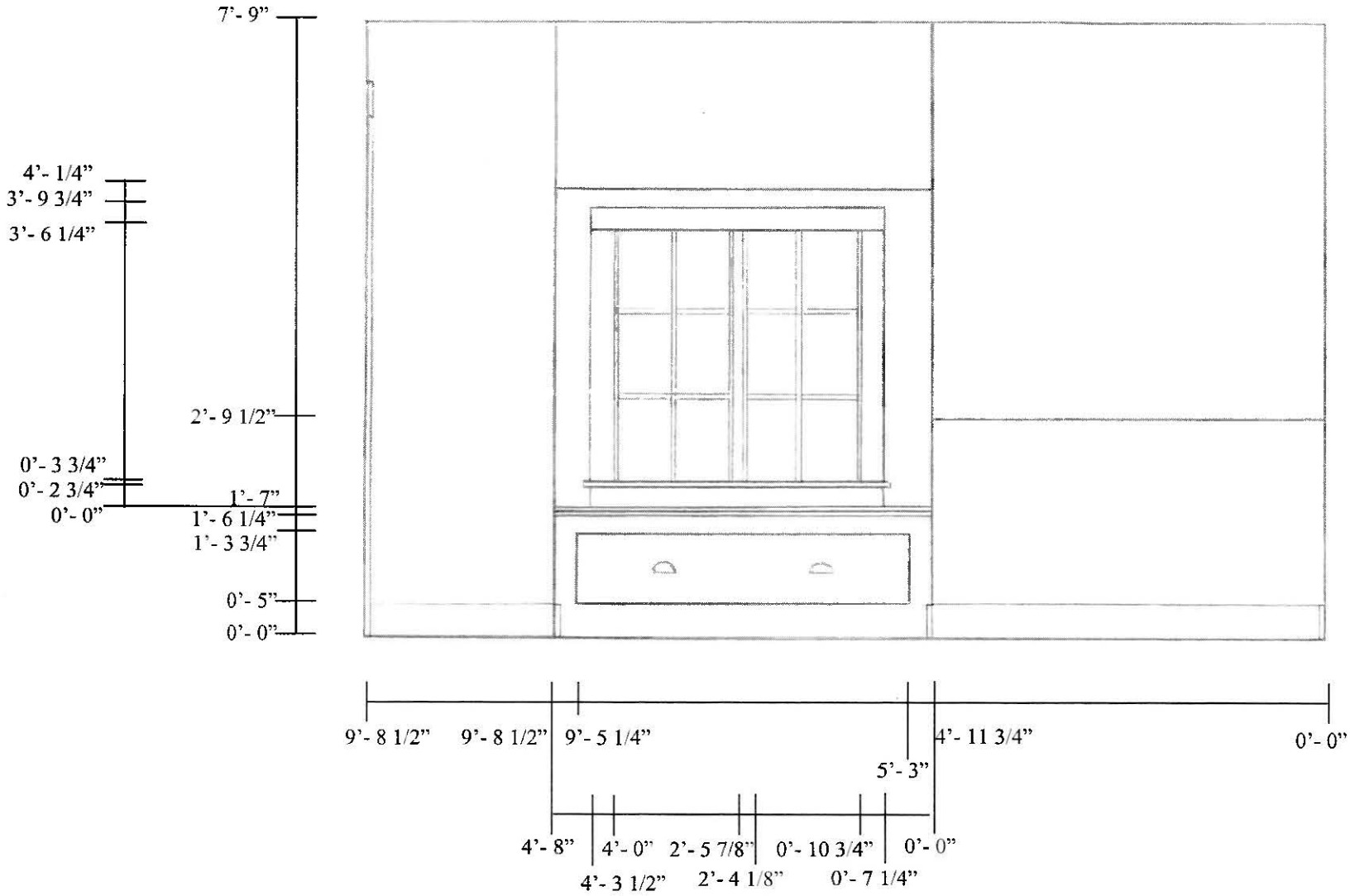
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 19 OF17	**UPSTAIRS NORTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

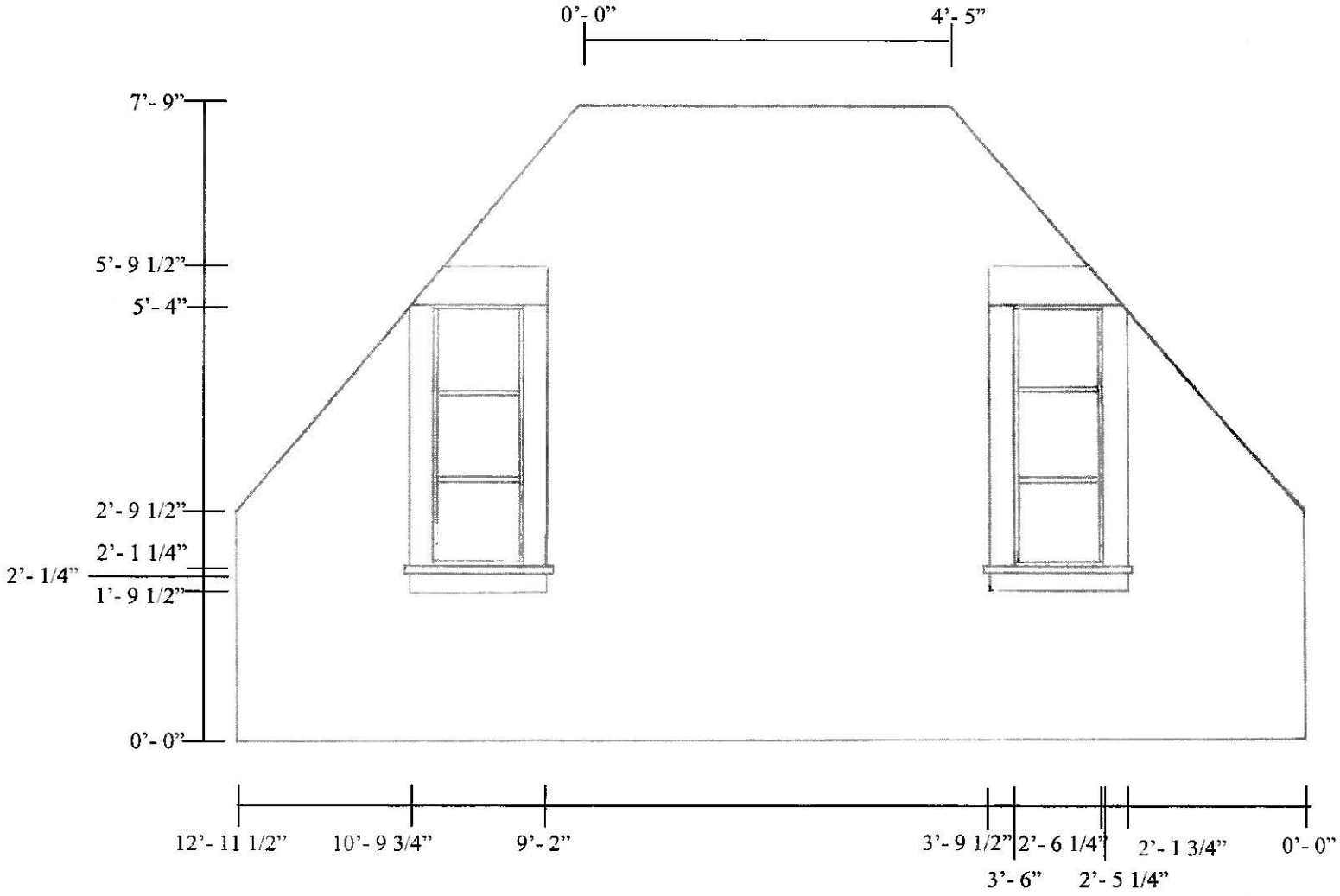
DATE 8/7/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 10 OF17	**UPSTAIRS SOUTH ELEVATION (EAST END)**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

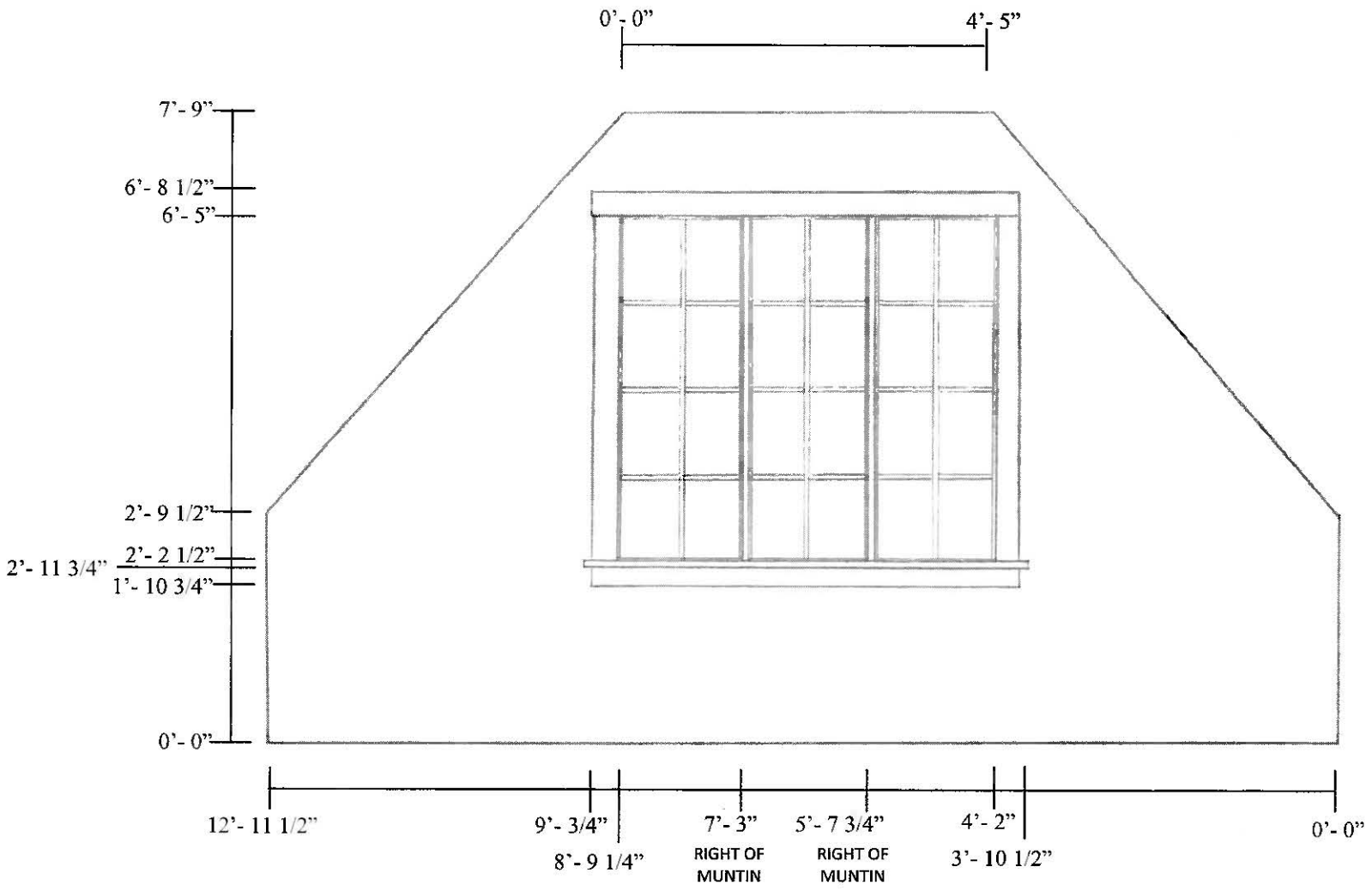
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 11 OF17	**UPSTAIRS SOUTH ELEVATION (WEST END)**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

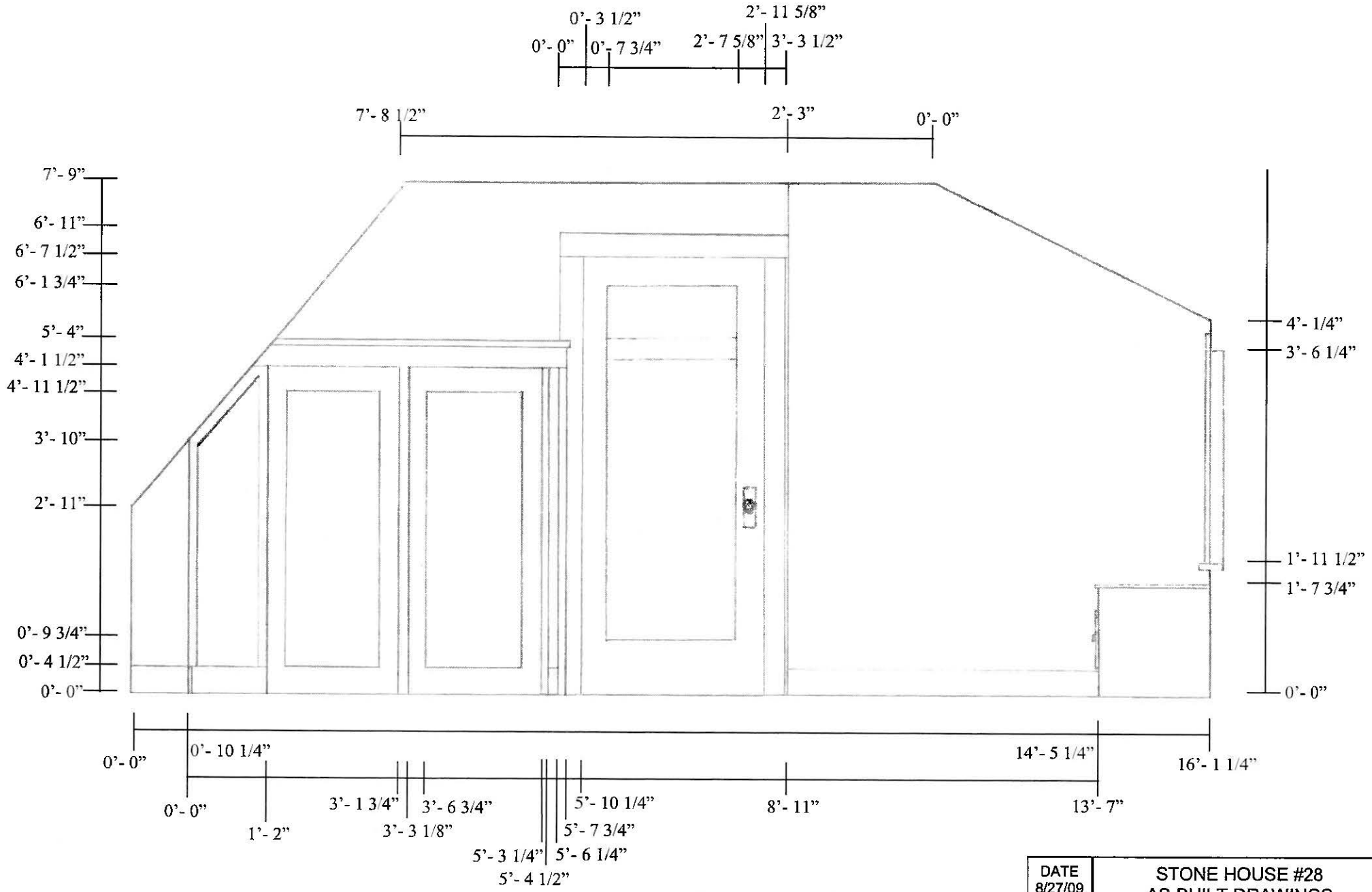
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 12 OF17	**UPSTAIRS** **WEST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

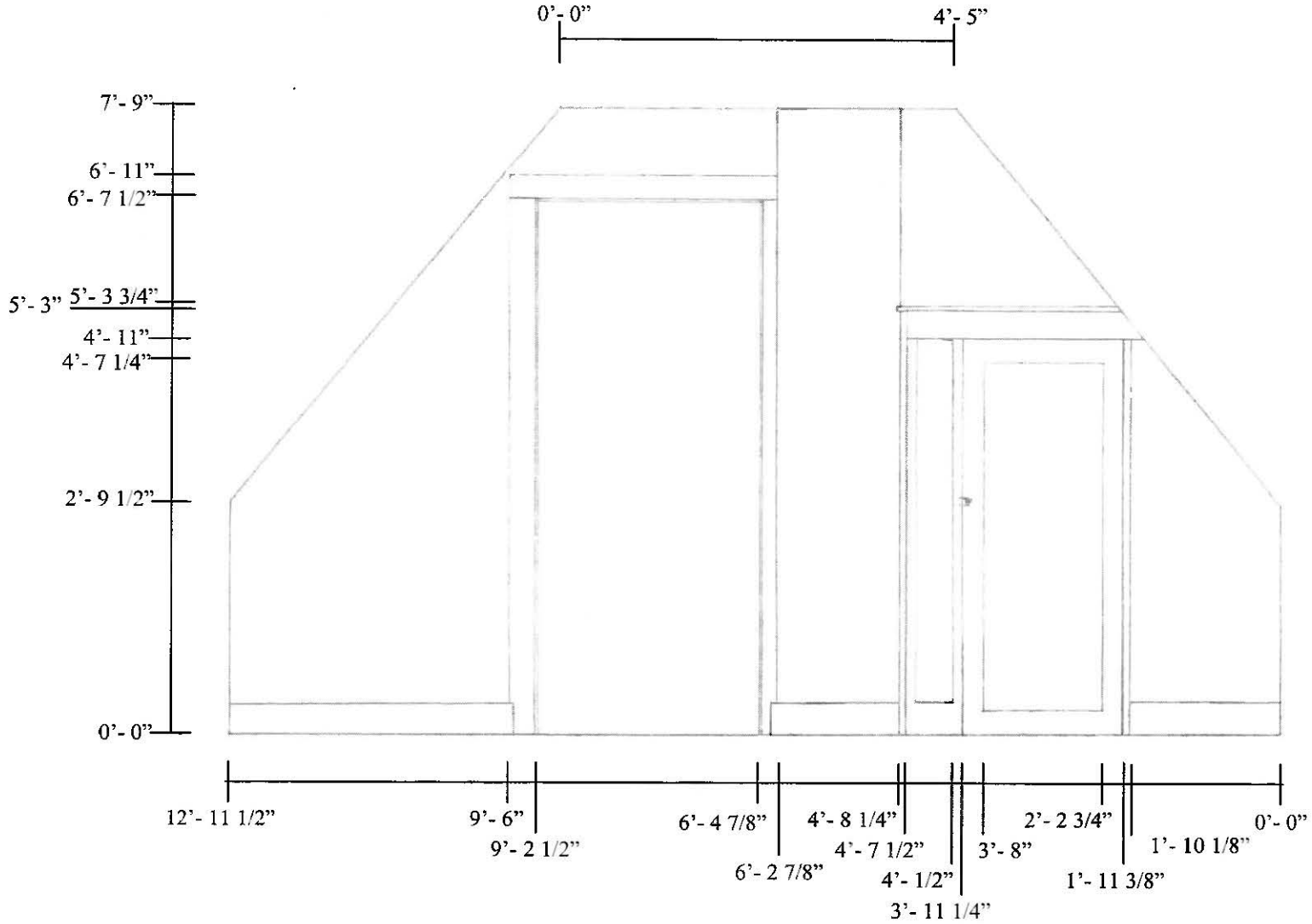
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 13 OF17	**UPSTAIRS** **EAST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

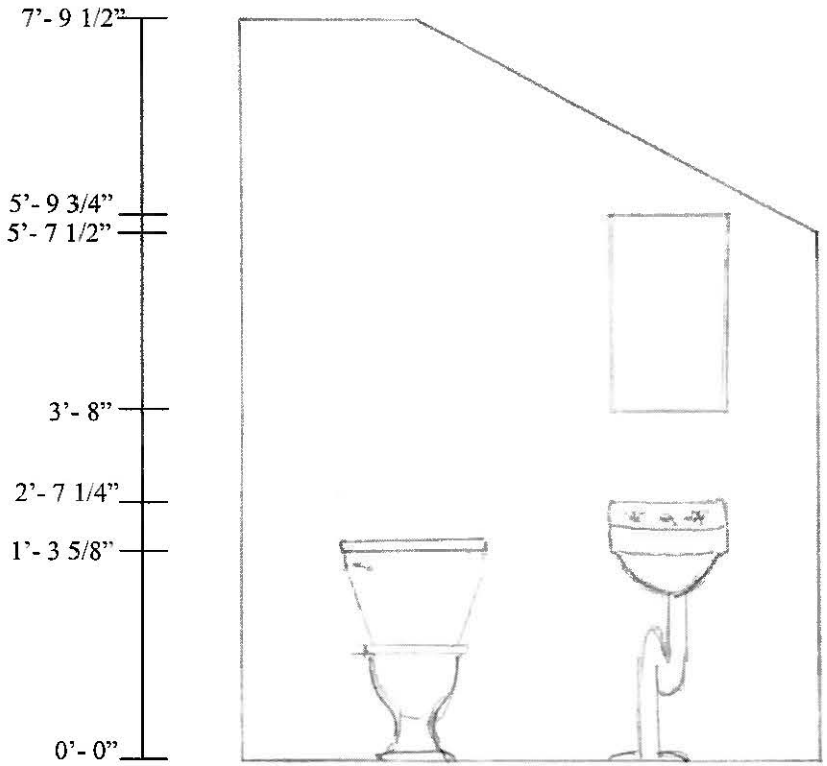
DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 14 OF17	**UPSTAIRS WEST BEDROOM EAST SECTION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



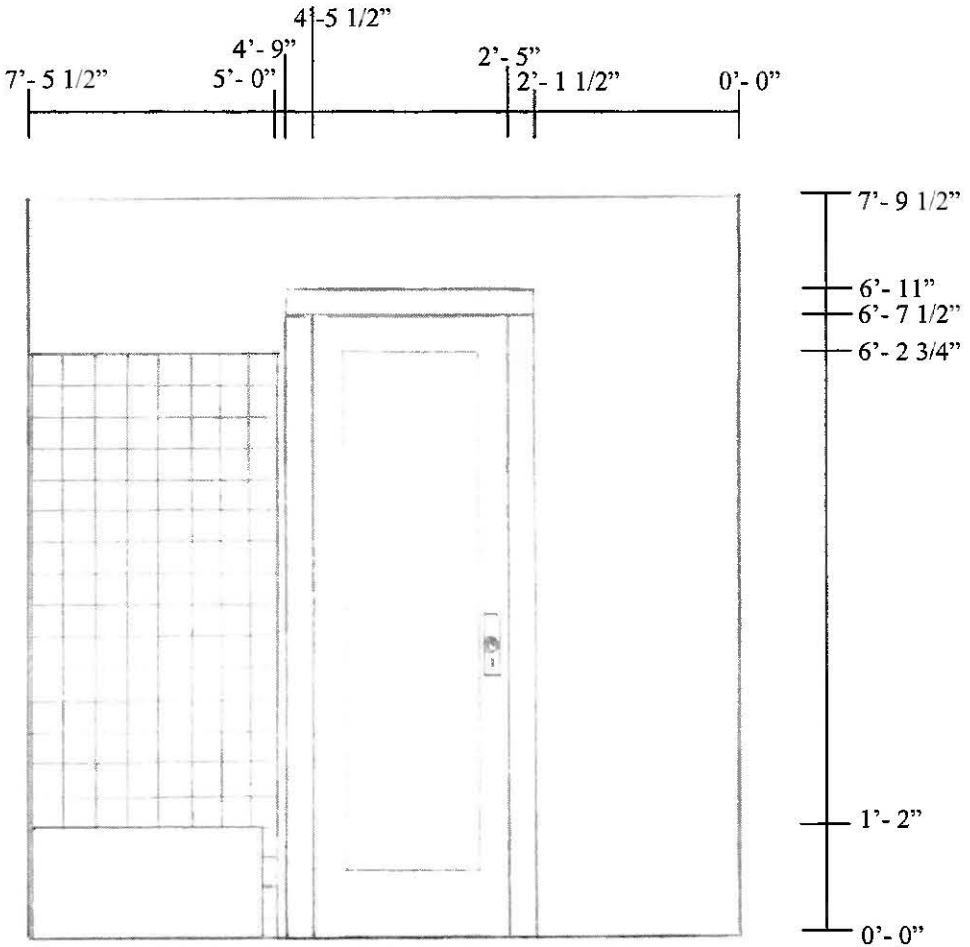
1 0 1 2 3

SCALE 1/2" = 1'- 0"

DATE 8/27/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 15 OF17	**UPSTAIRS EAST BEDROOM WEST SECTION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



BATHROOM EAST ELEVATION

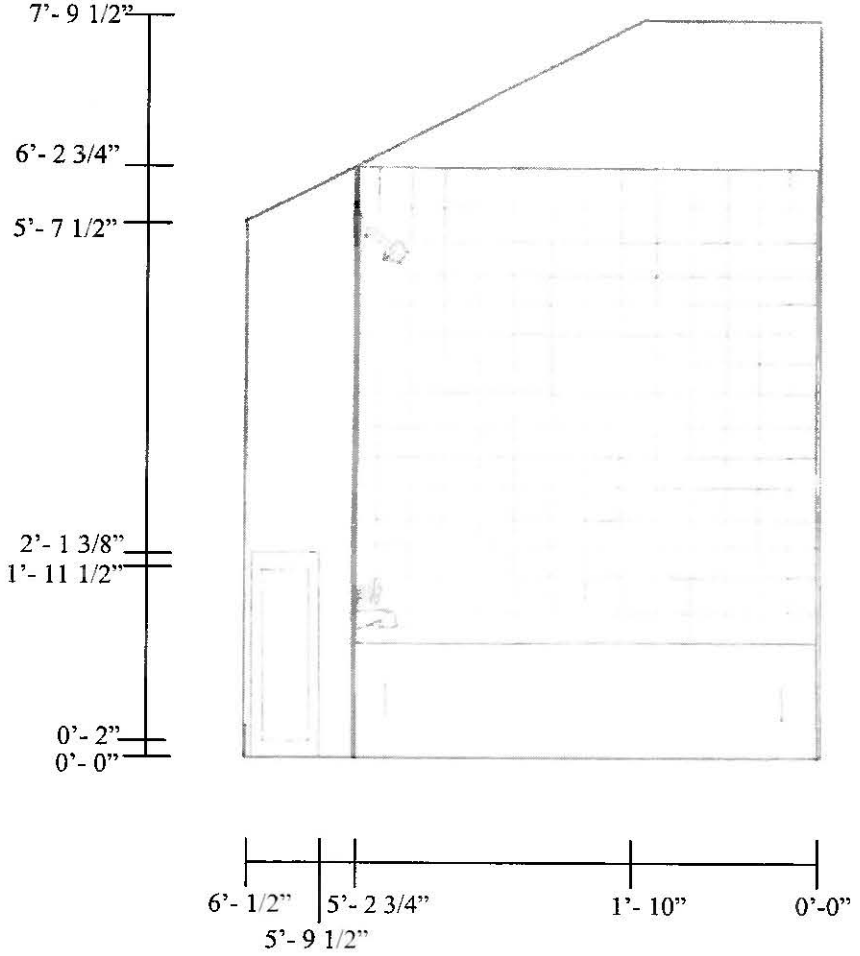


BATHROOM NORTH ELEVATION

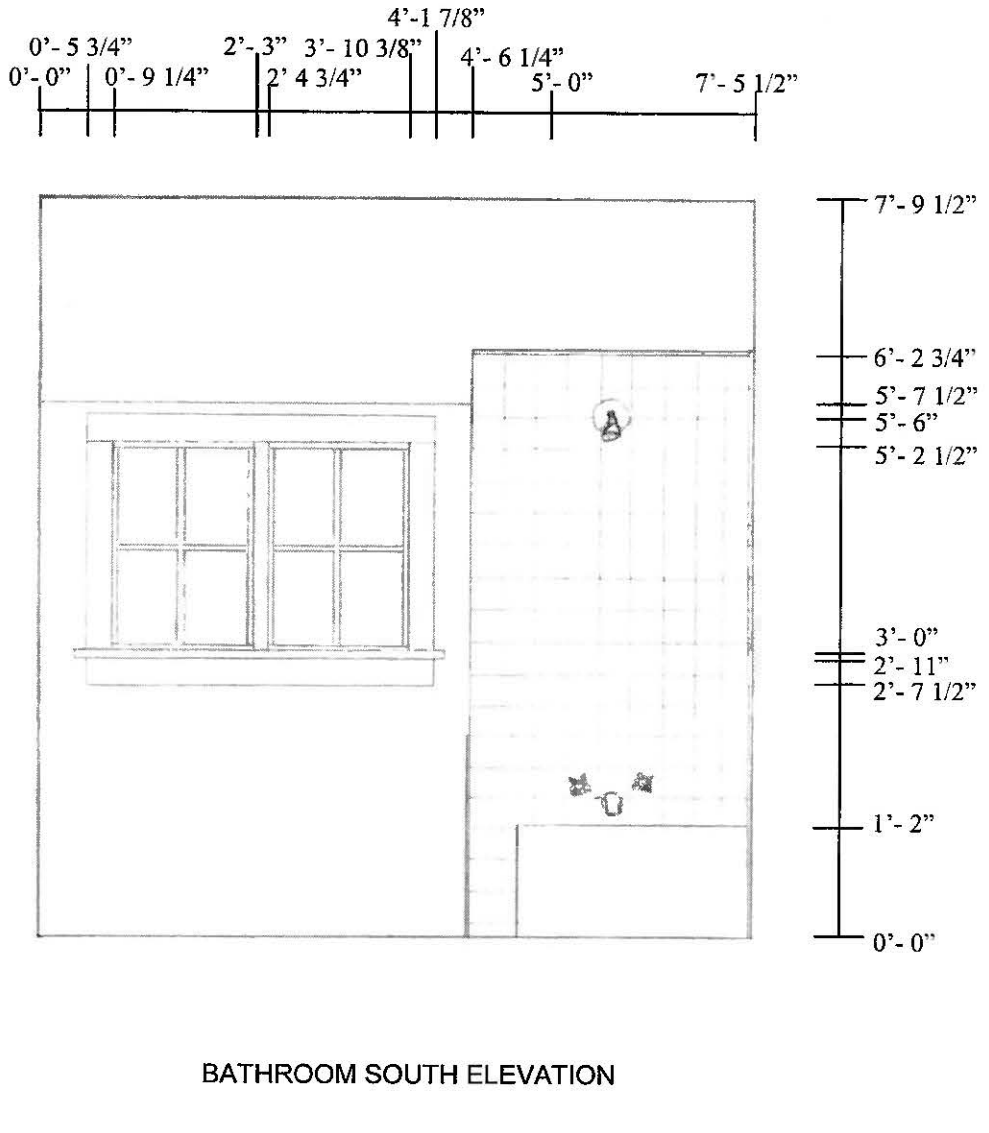
1 0 1 2 3

SCALE 1/2" = 1'- 0"

DATE 8/25/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 16 OF17	**BATHROOM**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



BATHROOM WEST ELEVATION



BATHROOM SOUTH ELEVATION

1 0 1 2 3

SCALE 1/2" = 1'- 0"

DATE 8/25/09	STONE HOUSE #28 AS-BUILT DRAWINGS
SHEET 17 OF17	**BATHROOM**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT

Stone House #28 Interior Images ~ Ground Floor

Kitchen facing South

Mudroom facing North

Stairway on north side

Utility closet with beadboard finish

Downstairs view facing east through living room to kitchen

Living room facing West with massive stone chimney and original wood floor

Window frame detail, note sill detail

Stone House #28 Interior Images ~ 2nd Floor

Bathroom door and bedroom door frames

Dormer facing South

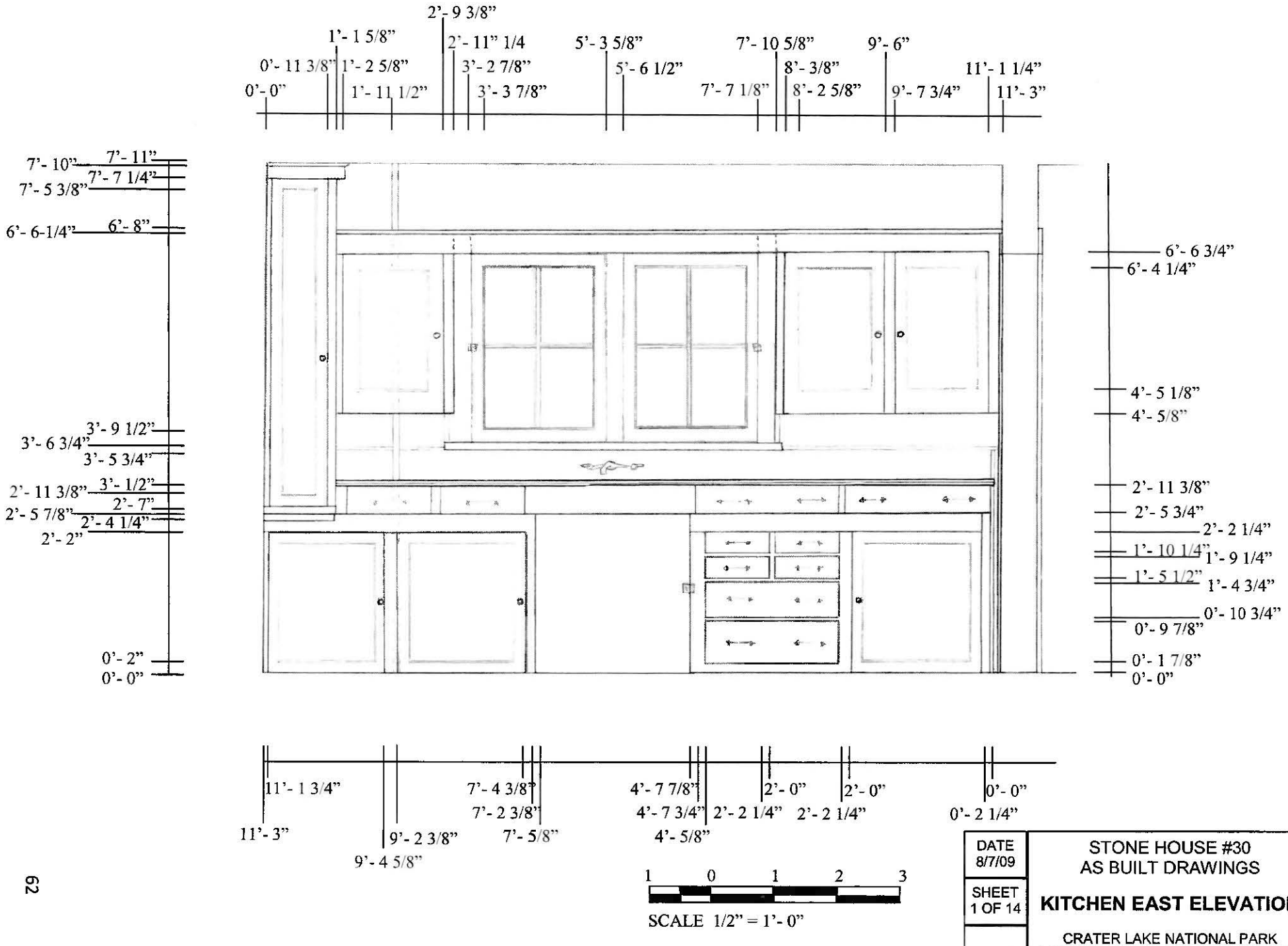
Upstairs bedroom facing West, note curved angled corners

Closet in west bedroom

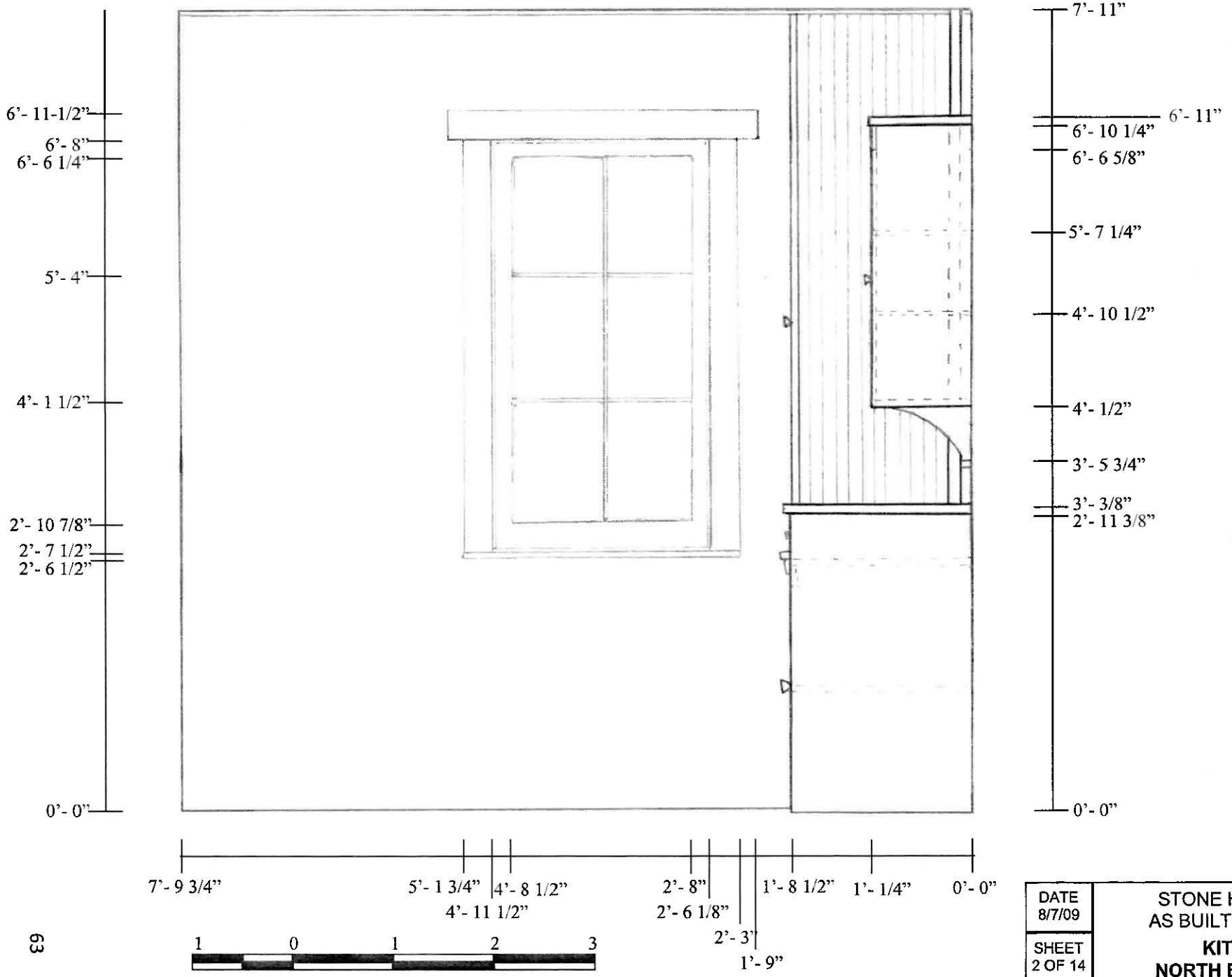
Bathroom facing South

Upstairs entry detail

Door frame detail

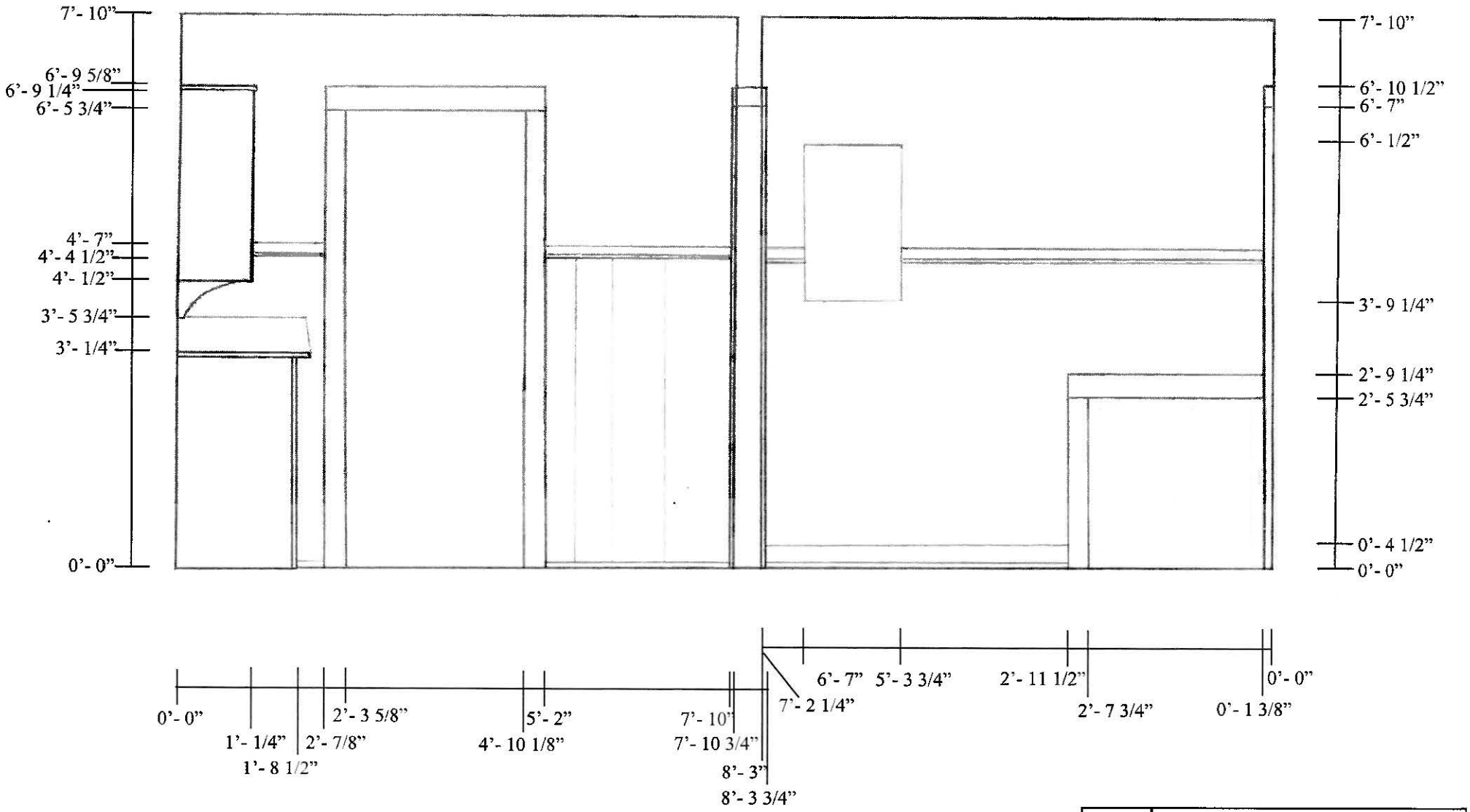


DATE 8/7/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 1 OF 14	**KITCHEN EAST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



SCALE 3/4" = 1'- 0"

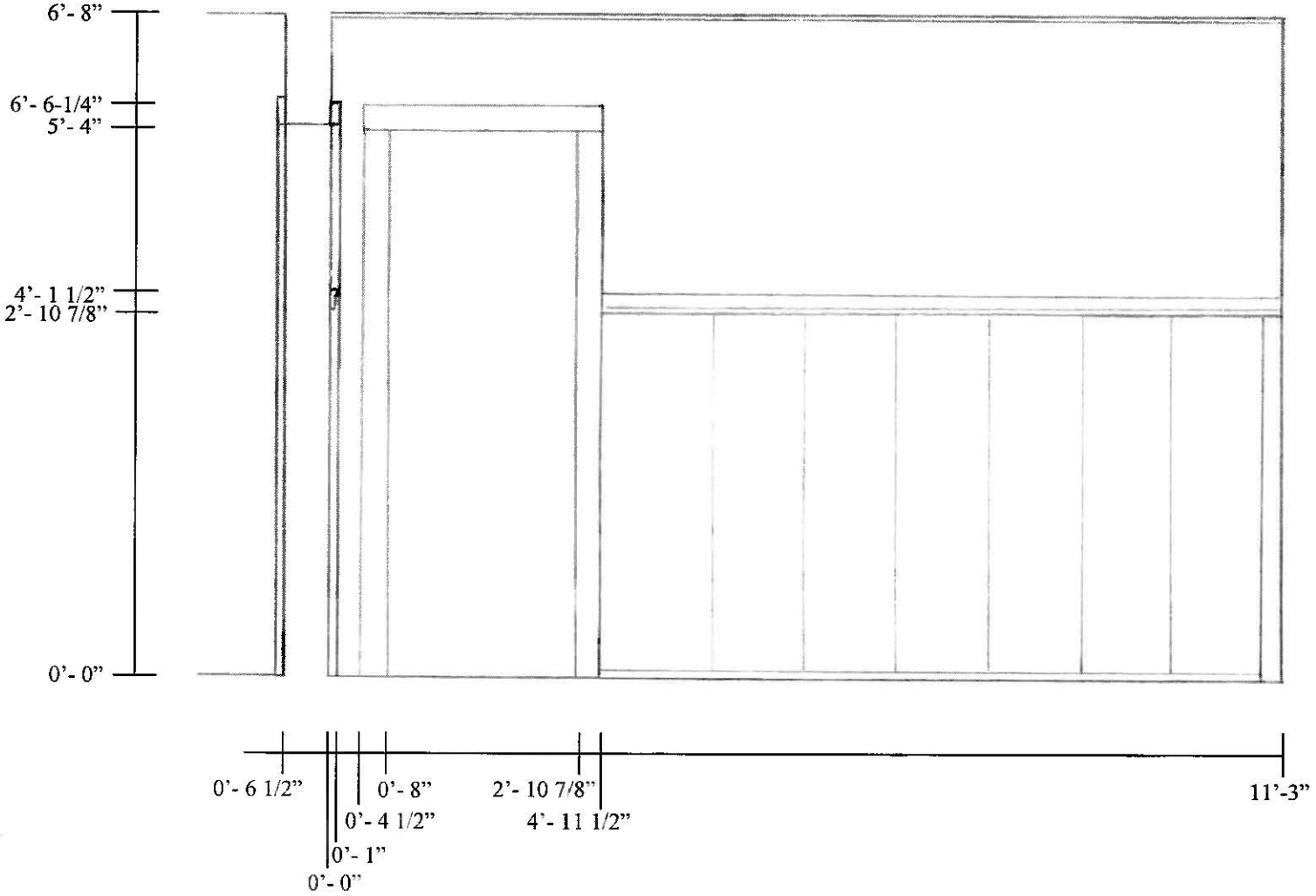
DATE 8/7/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 2 OF 14	**KITCHEN** **NORTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

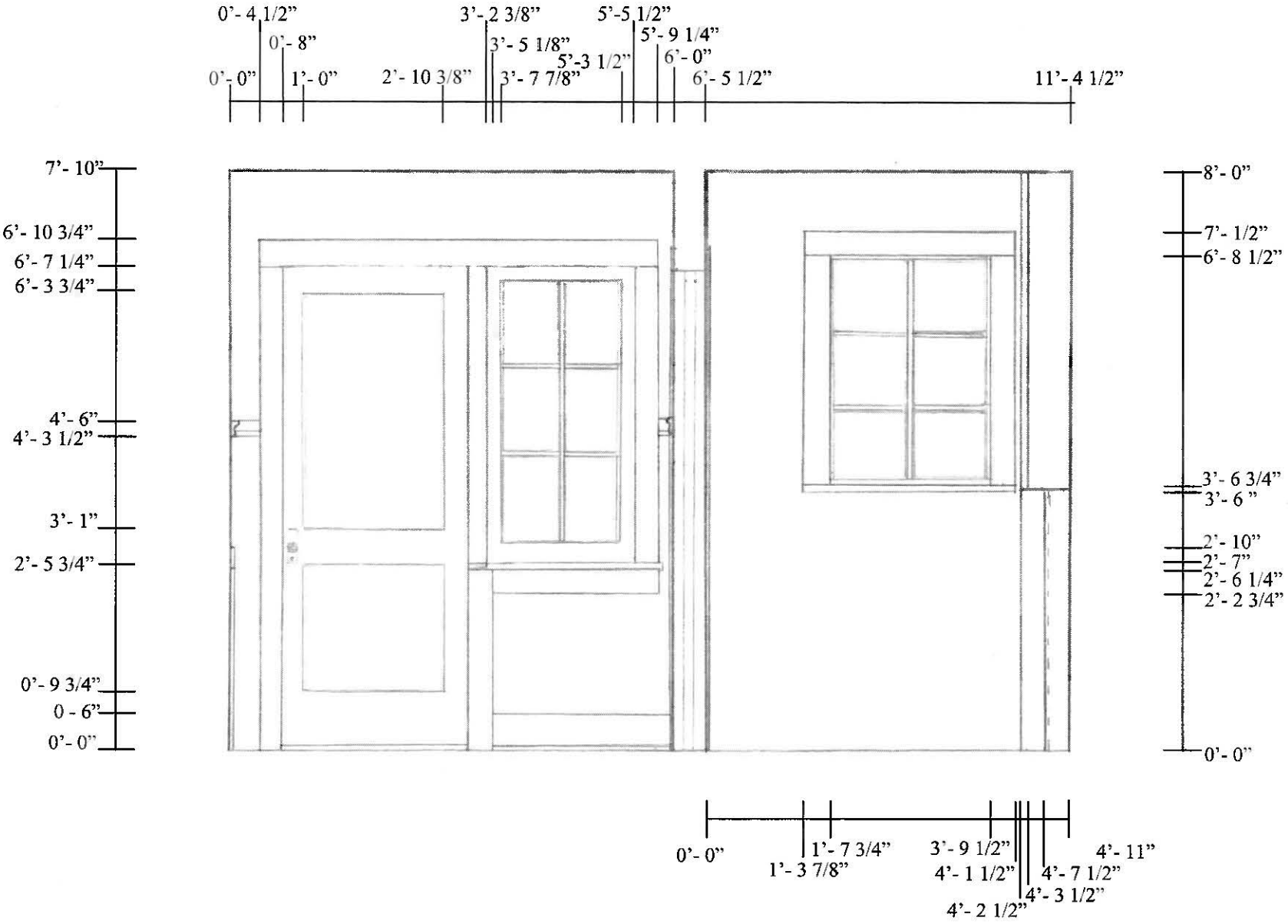
SCALE 1/2" = 1'- 0"

DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 3 OF 14	**KITCHEN** **SOUTH SECTION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



SCALE 3/4" = 1'- 0"

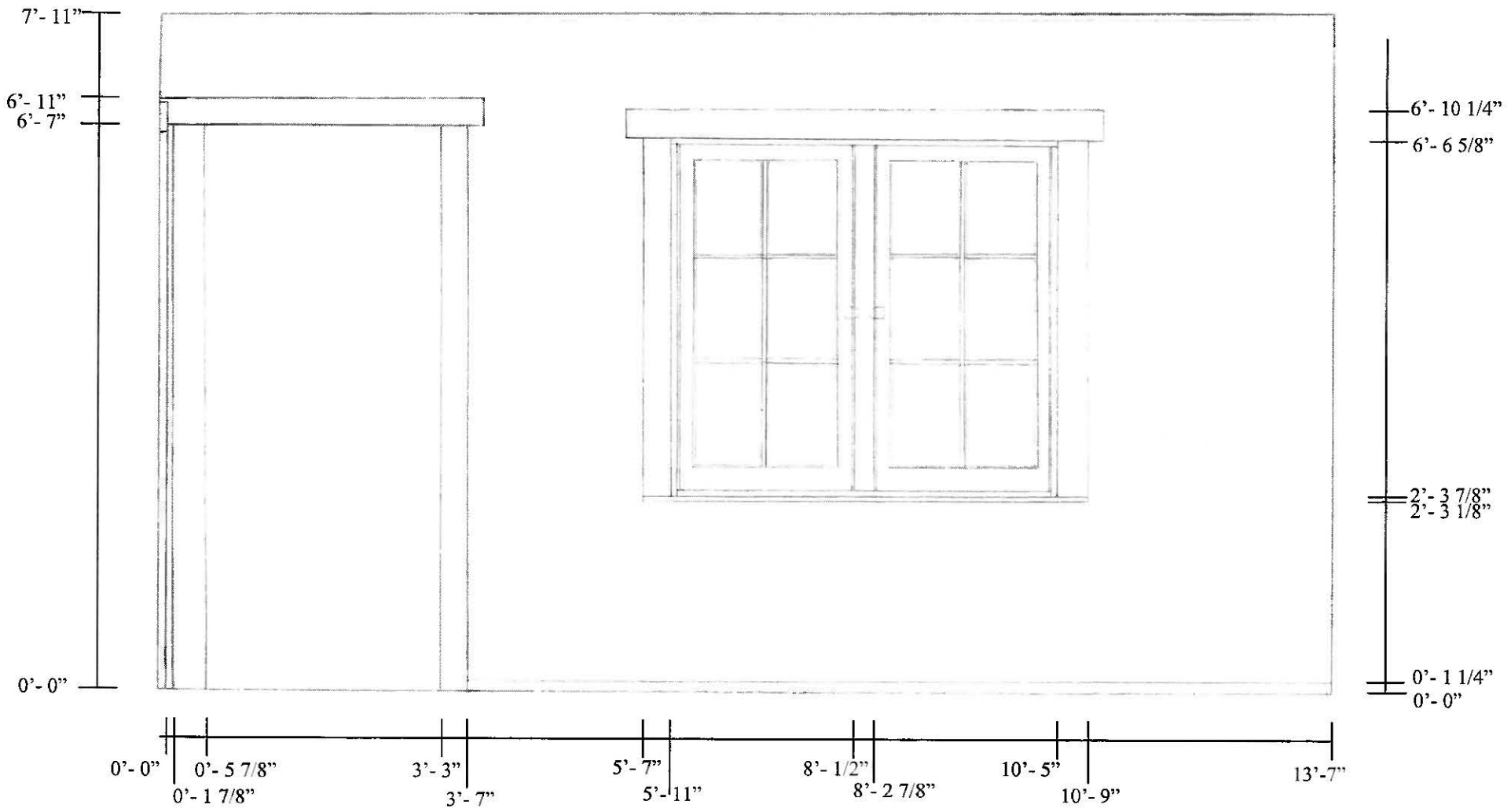
DATE 8/7/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 4 OF 14	**KITCHEN WEST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

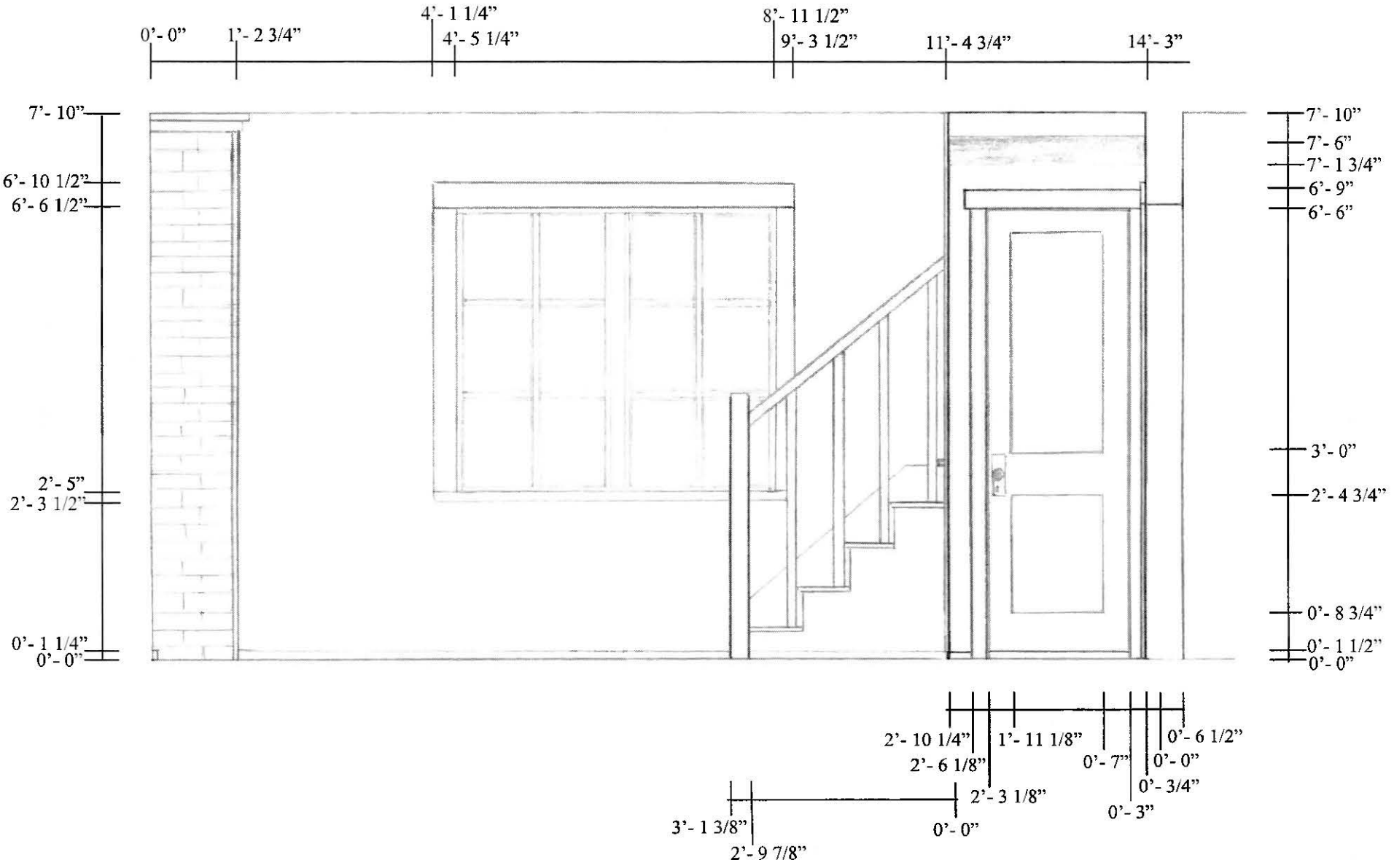
DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 5 OF 14	**BATHROOM/MUDROOM WEST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

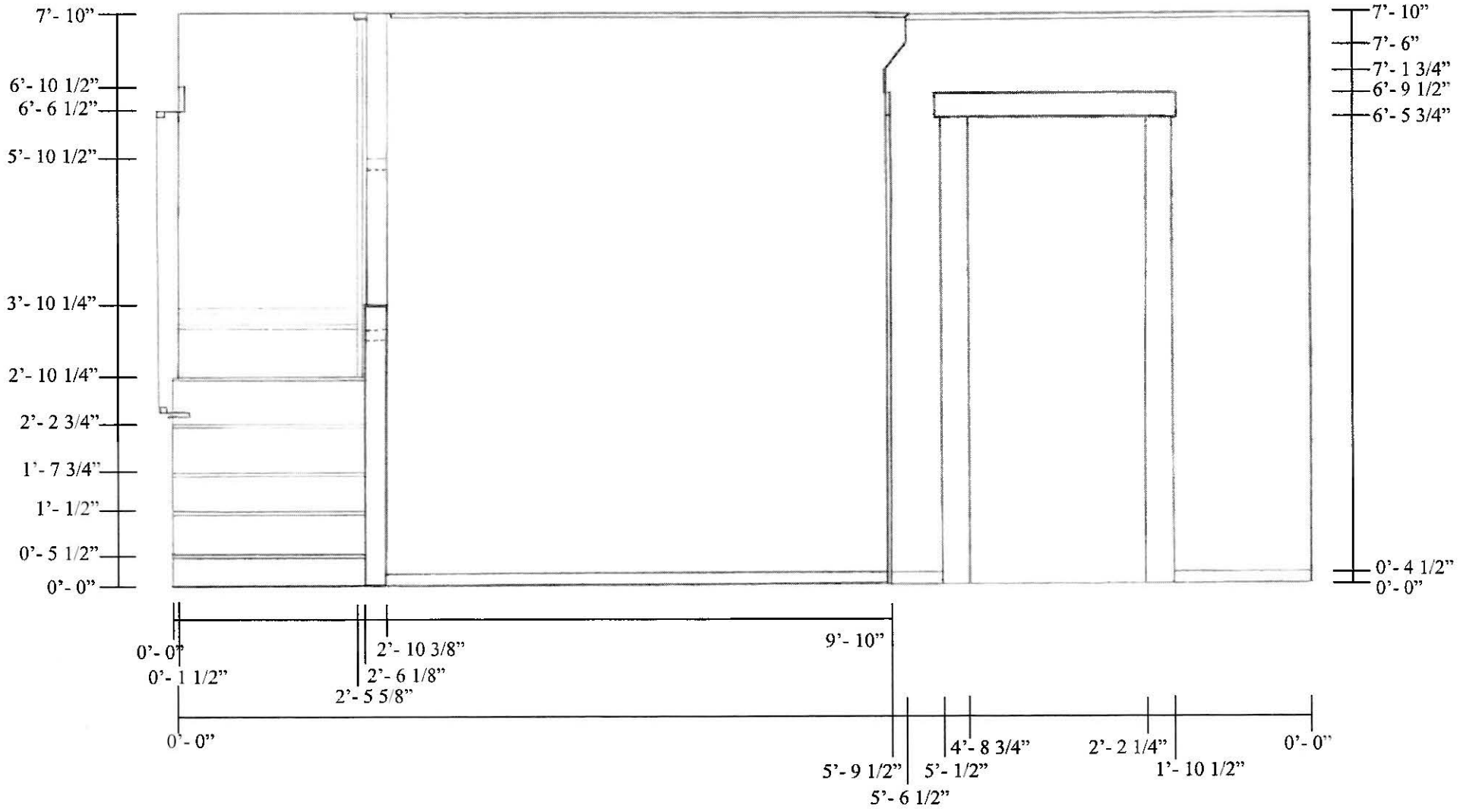
DATE 8/7/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 6 OF 14	**LIVING ROOM** **EAST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

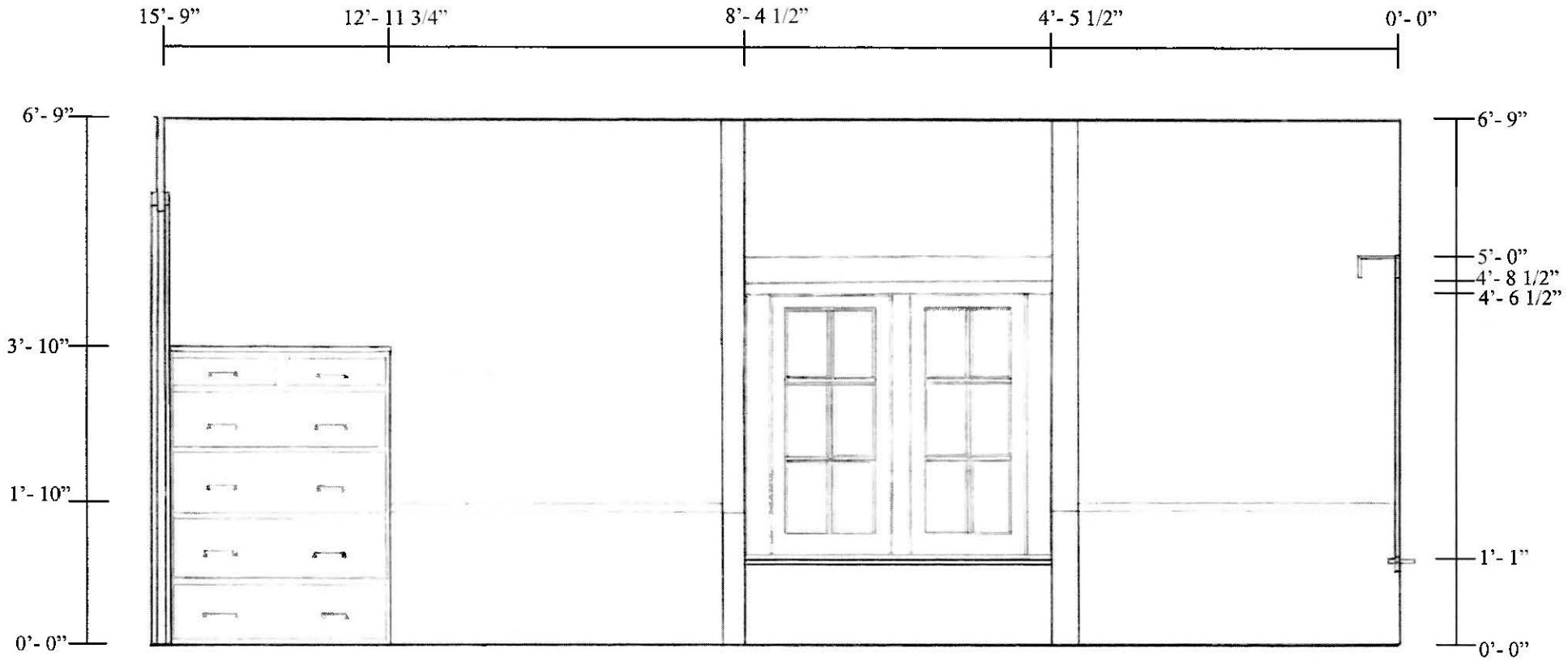
DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 7 OF 14	**LIVING ROOM** **WEST ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

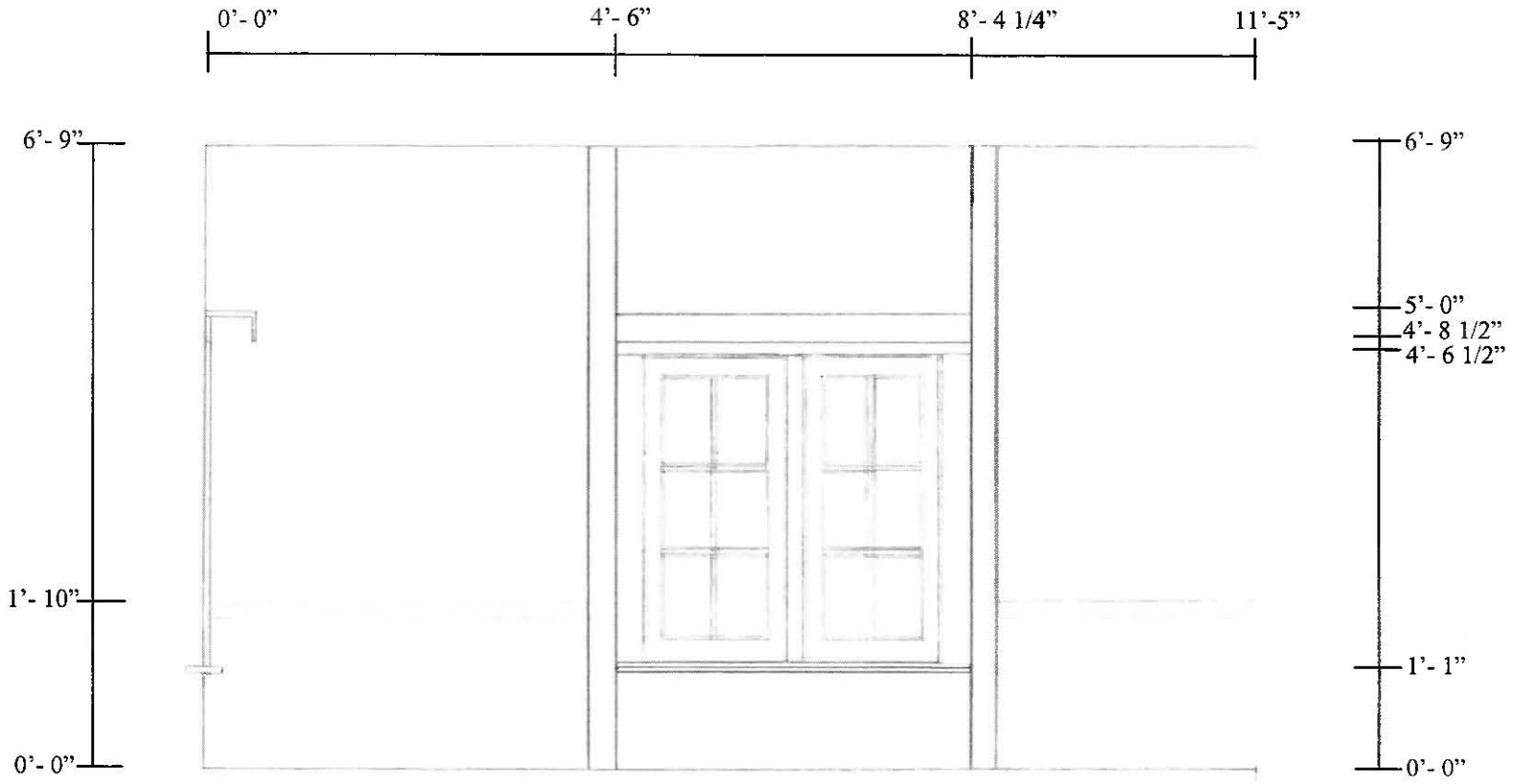
DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 8 OF 14	**LIVING ROOM** **NORTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

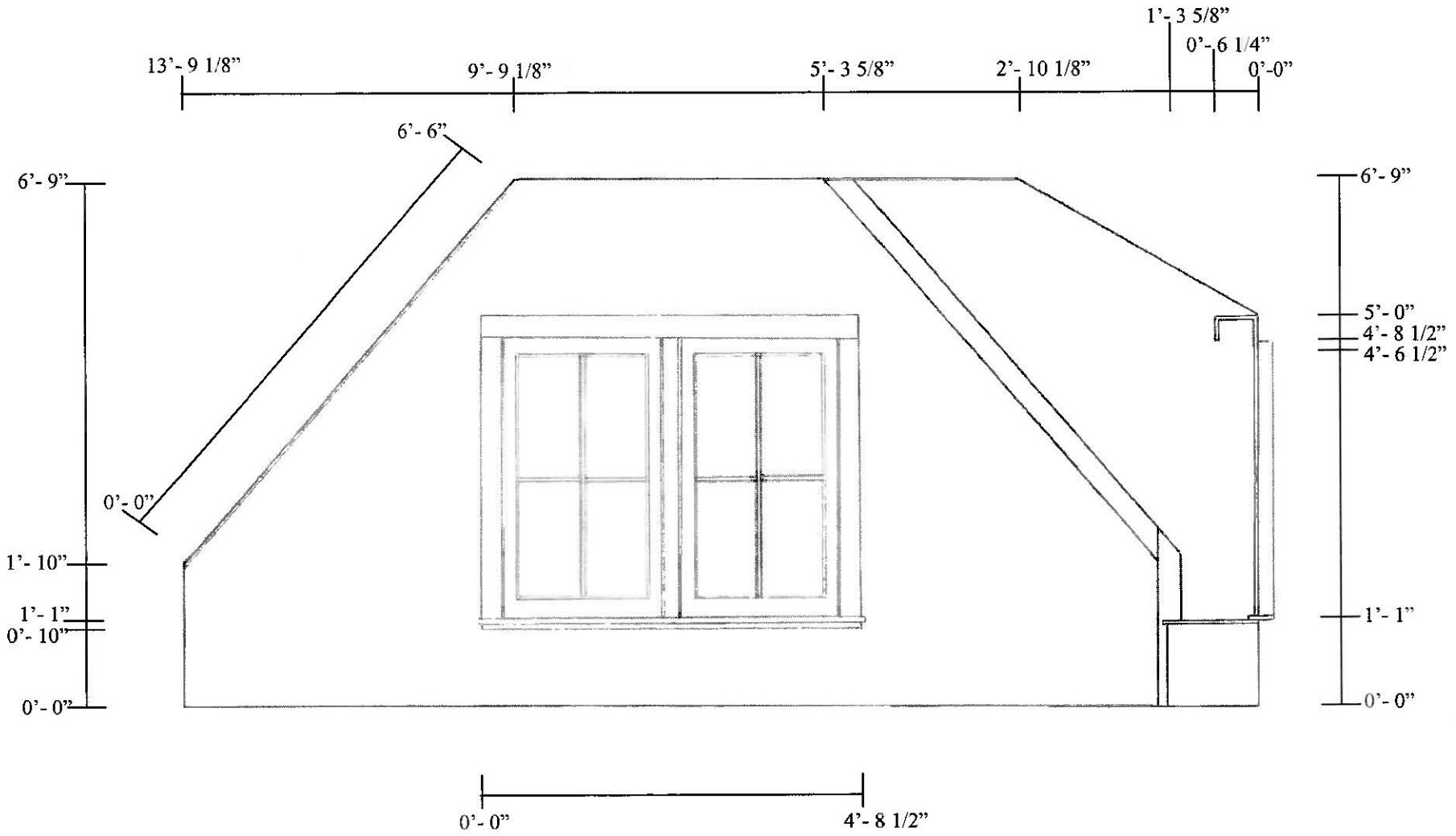
DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 9 OF 14	**UPSTAIRS EAST ELEVATION (SOUTH END)**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

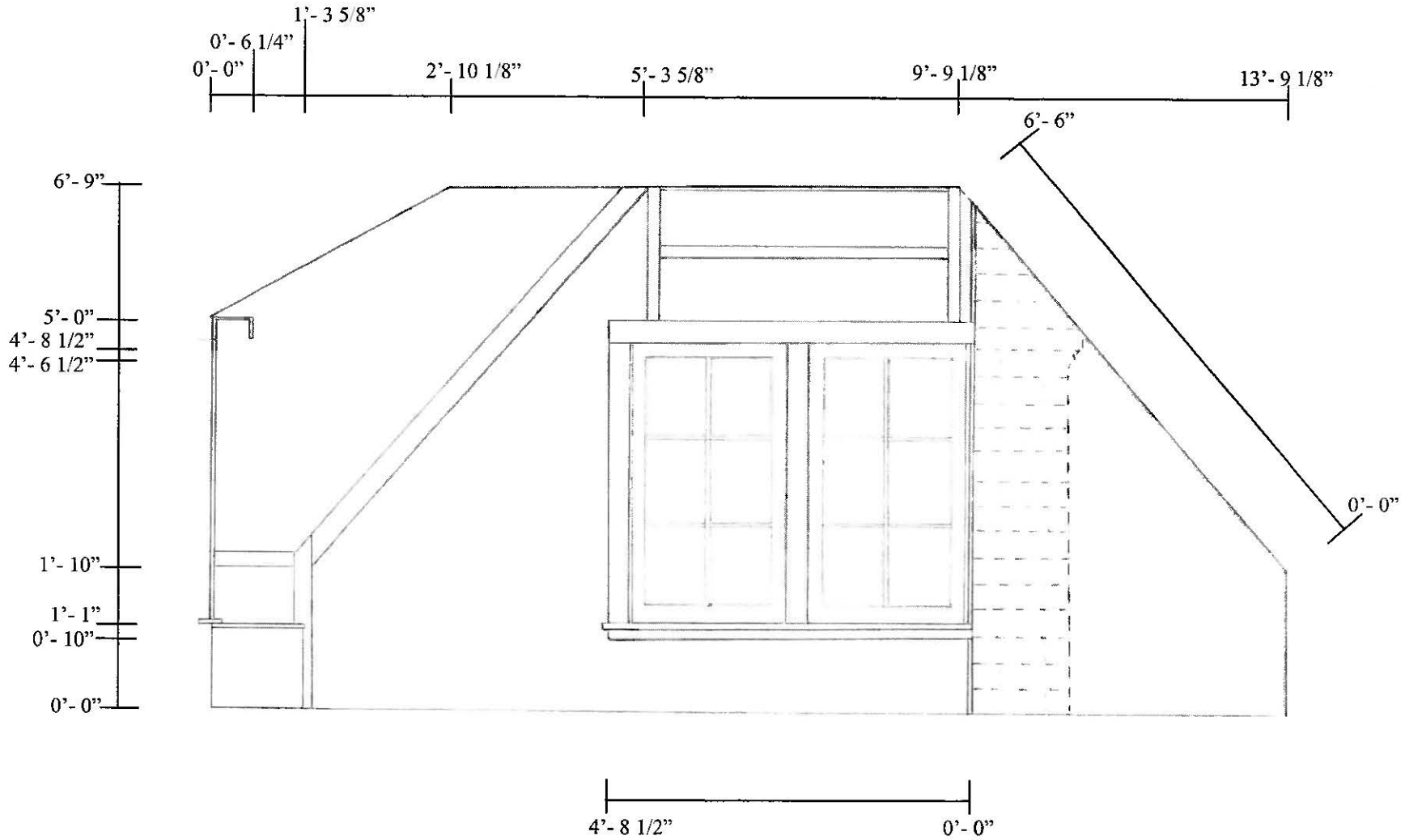
DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 10 OF14	**UPSTAIRS EAST ELEVATION (NORTH END)**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

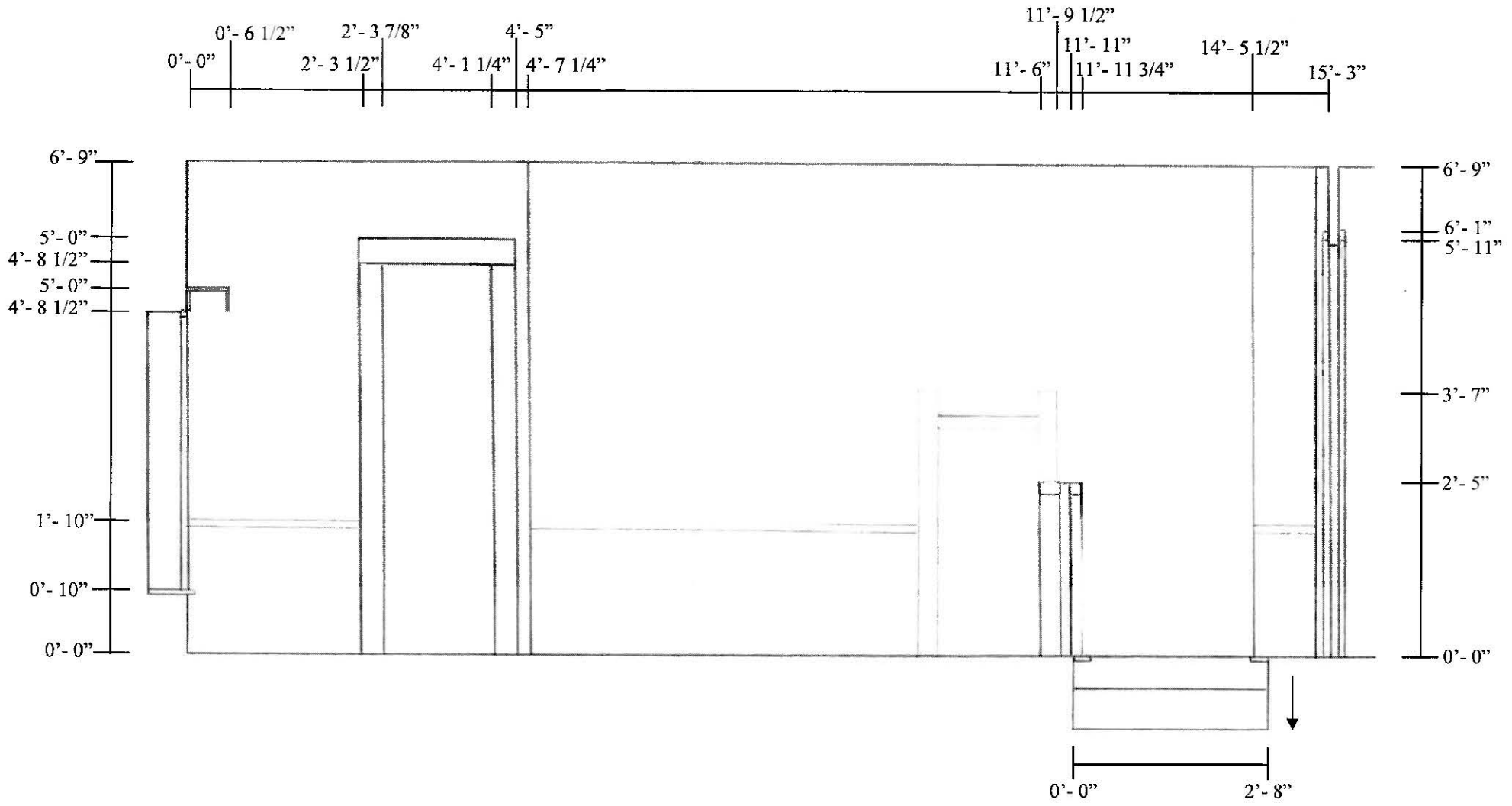
DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 11 OF 14	**UPSTAIRS NORTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

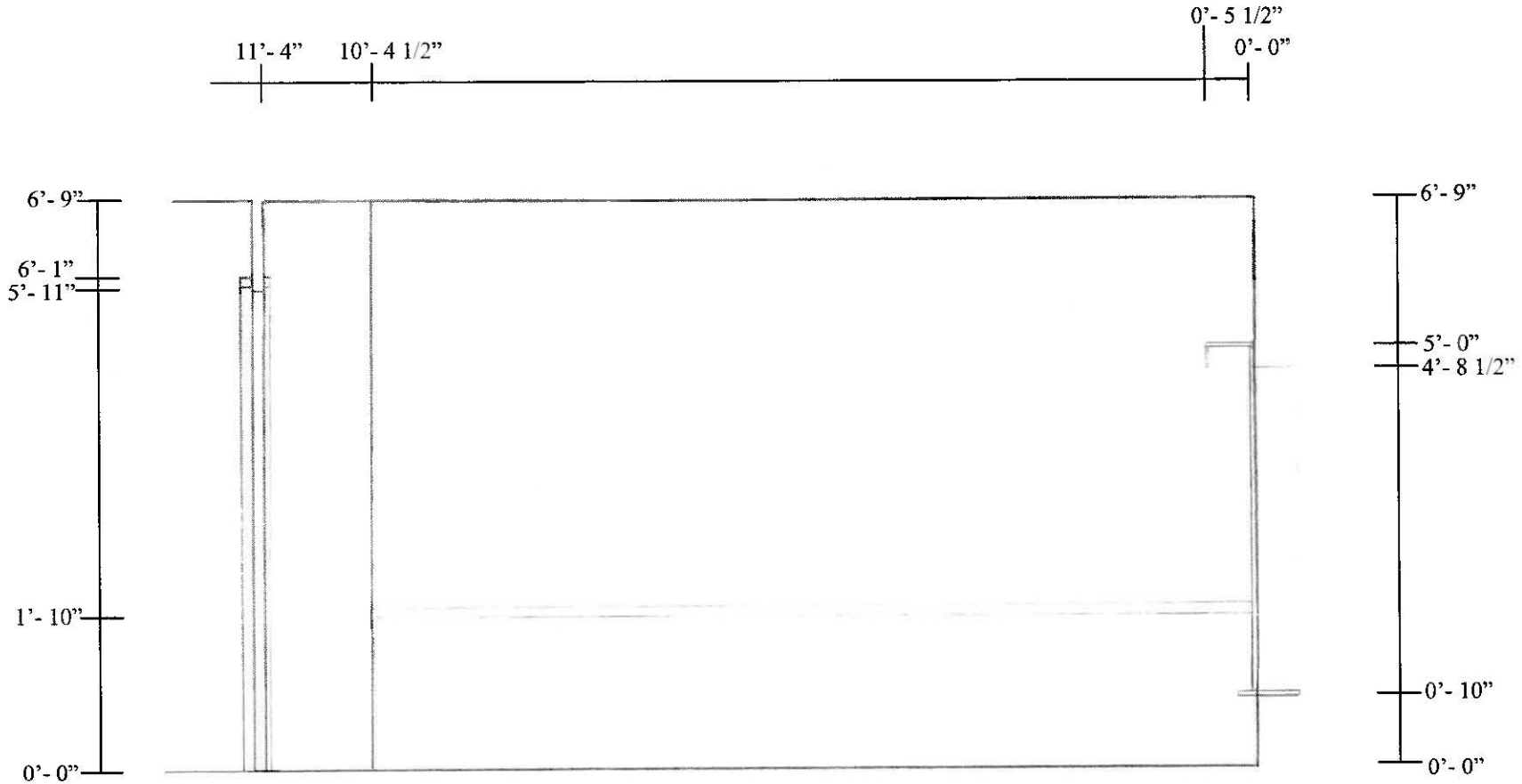
DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 12 OF 14	**UPSTAIRS** **SOUTH ELEVATION**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 13 OF 14	**UPSTAIRS WEST ELEVATION (SOUTH END)**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT



1 0 1 2 3

SCALE 1/2" = 1'- 0"

DATE 8/11/09	STONE HOUSE #30 AS BUILT DRAWINGS
SHEET 14 OF 14	**UPSTAIRS WEST ELEVATION (NORTH END)**
PRC	CRATER LAKE NATIONAL PARK MUNSON VALLEY HISTORIC DISTRICT

Stone House #30 Interior Images ~ 2nd Floor

North bedroom facing South

South Bedroom Closet

Stairway detail facing West

Stairway detail

South bedroom built-in dresser

Dormer facing East

Window frame detail

Stone House #30 Interior Images ~ 2nd Floor

North bedroom facing South

South Bedroom Closet

Stairway detail facing West

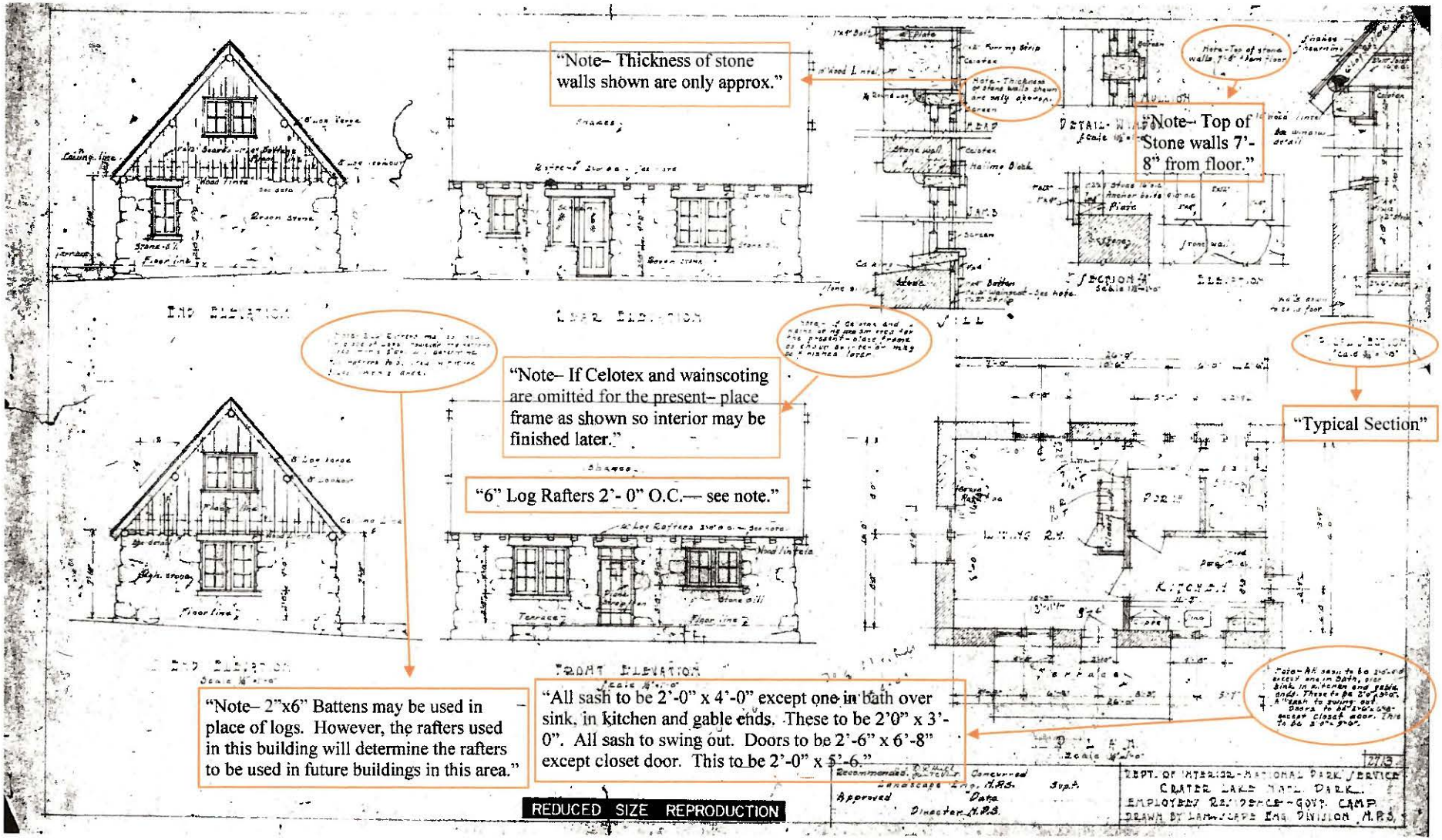
Stairway detail

South bedroom built-in dresser

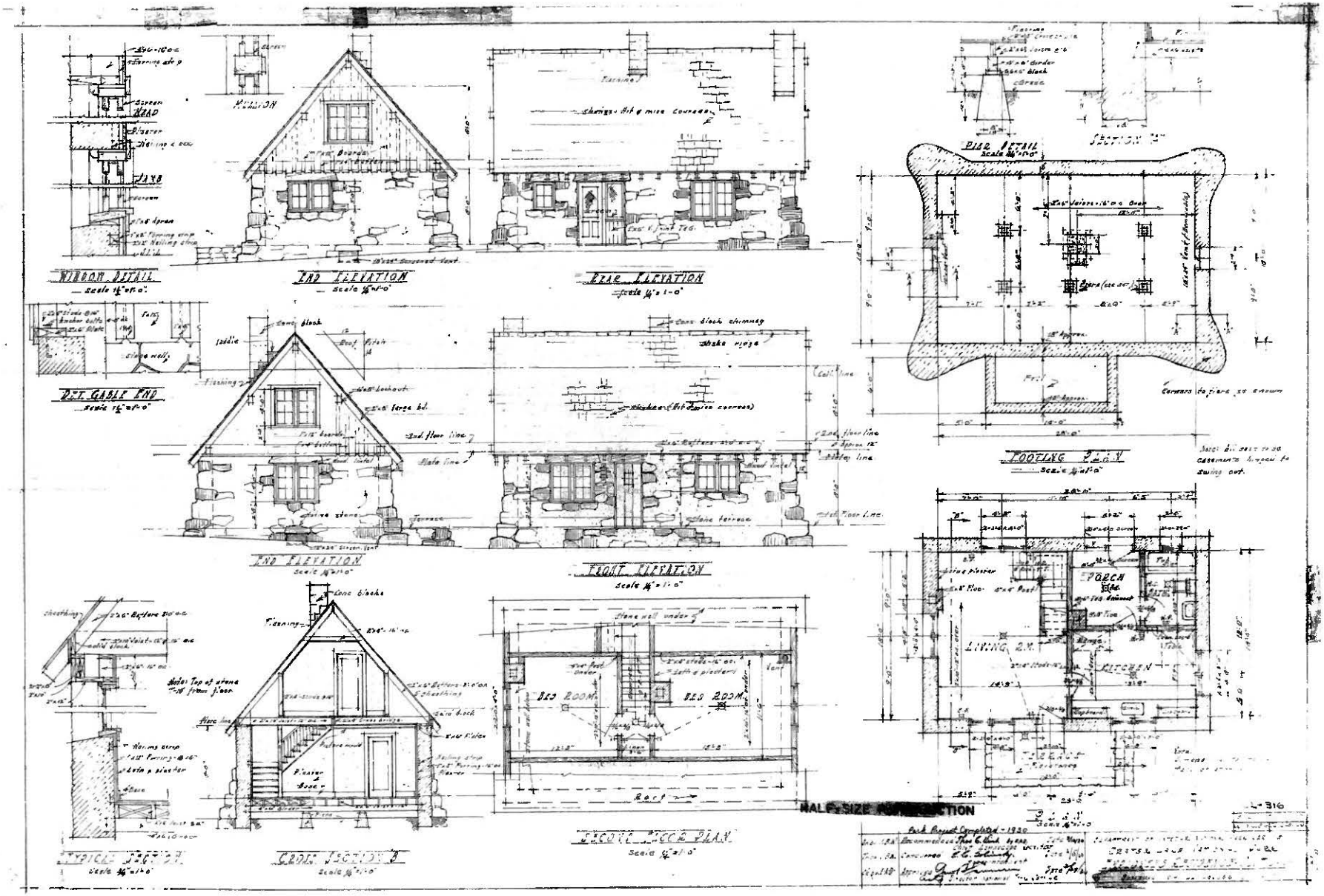
Dormer facing East

Window frame detail

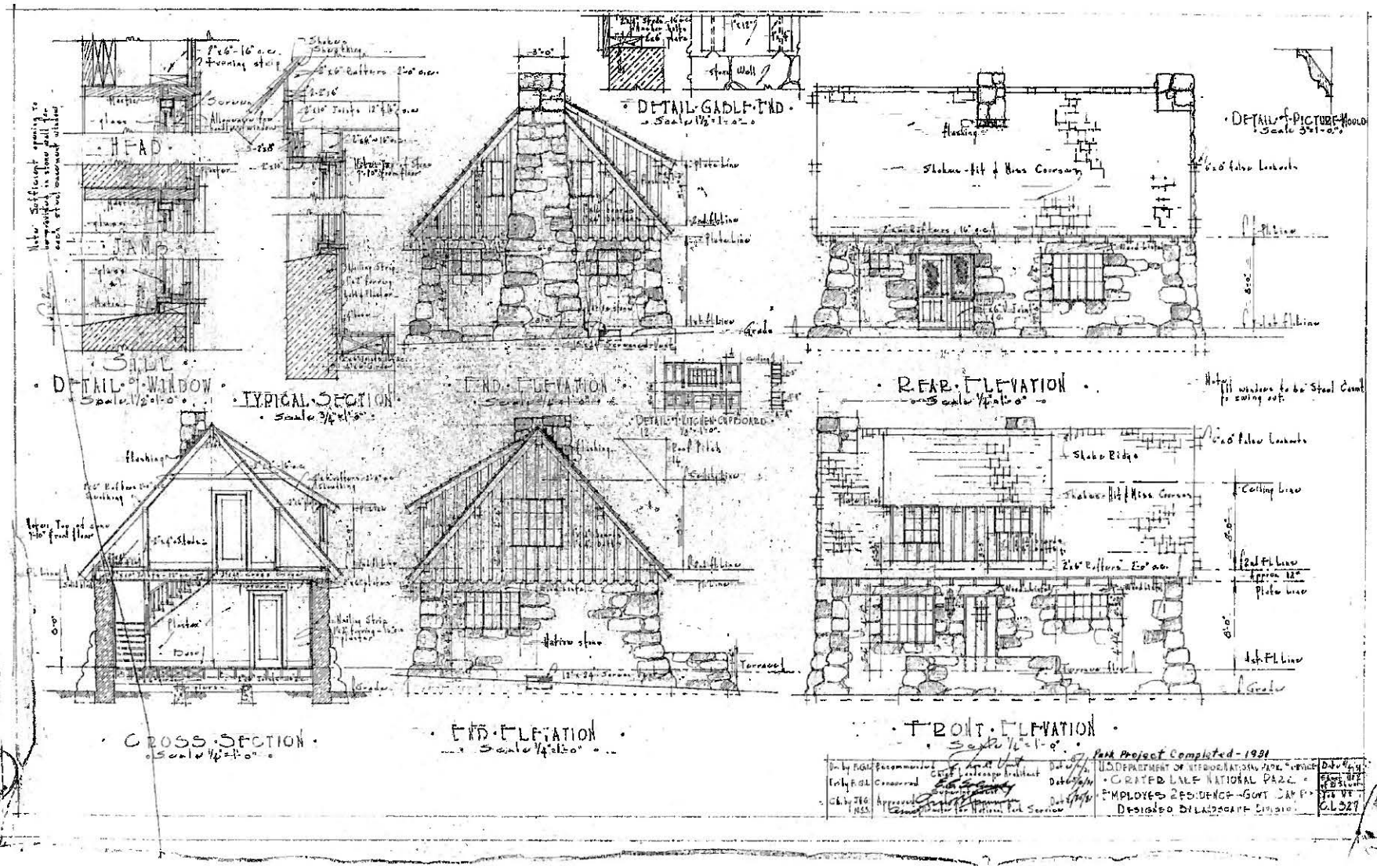
Original Drawings for Employees' Residences #30, 31 &32, Crater Lake National Park, by W.G. Carns, NPS Chief of Planning



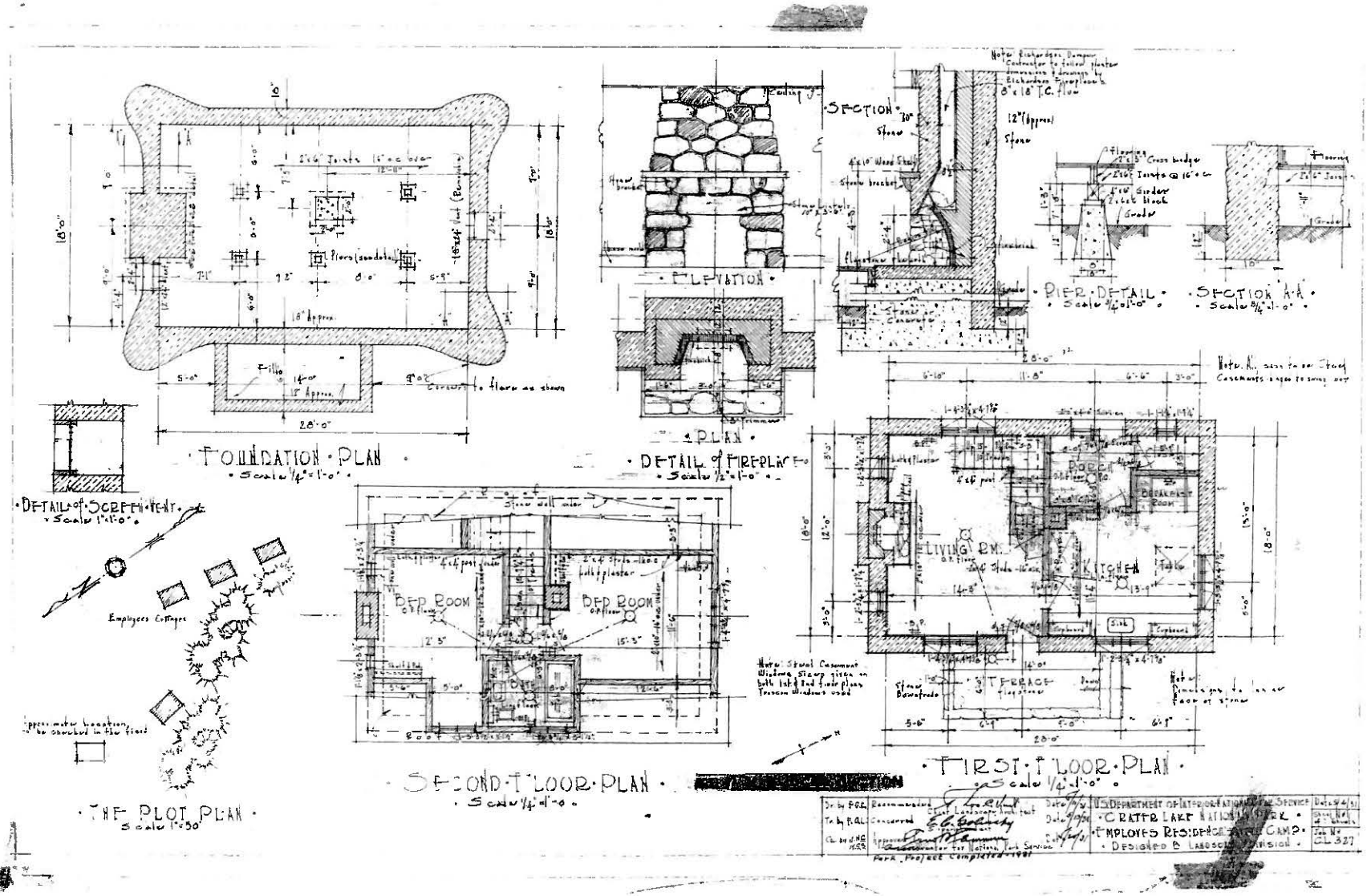
1930 Drawings for Employees' Residences #25 Crater Lake National Park, by Thomas Vint, NPS Chief Landscape Architect (30,31,&32 are simi



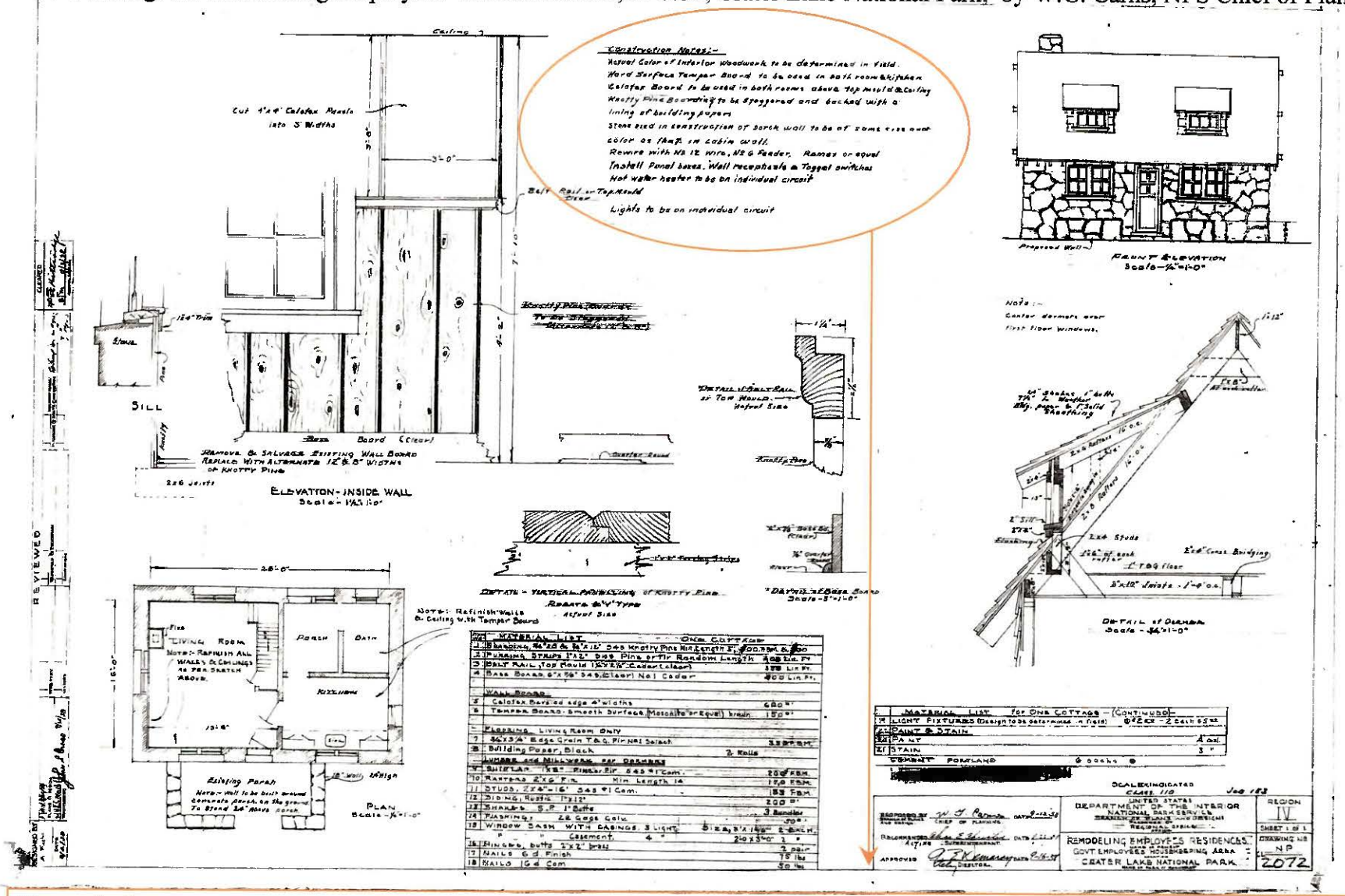
1931 Drawings for Employees' Residences #24 &28, Crater Lake National Park, by Thomas Vint, NPS Chief Landscape Architect



1931 Drawings for Employees' Residences #24 &28, Crater Lake National Park, by Thomas Vint, NPS Chief Landscape Architect

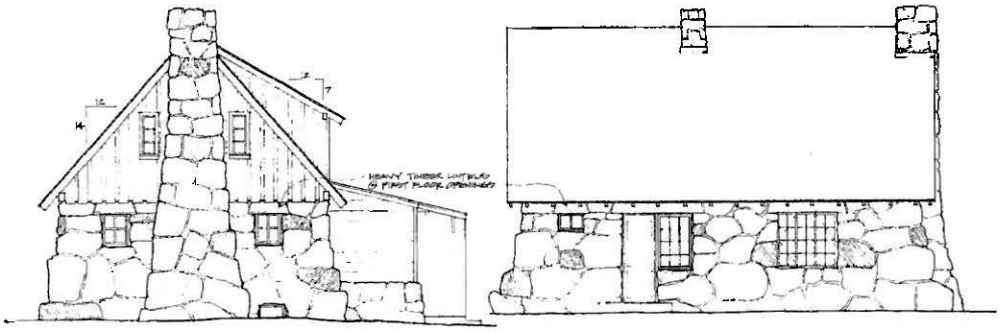


1939 Drawings for Remodeling Employees' Residences #30, 31 &32, Crater Lake National Park, by W.G. Carns, NPS Chief of Planning



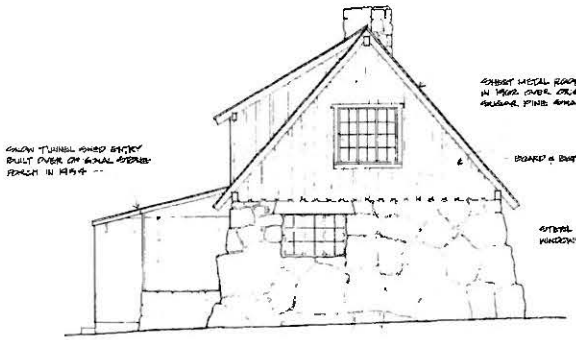
"Construction Notes: Actual Color of Interior Woodwork to be determined in field. Hard Surface Temper Board to be used in bathroom & kitchen. Celotex Board to be used in both rooms above top mould & ceiling. Knotty Pine Boarding to be staggered and backed with a lining of building paper. Stone used in construction of porch wall to be of same size and color as that in cabin wall. Rewire with No 12 Wire, No 6 Feeder. Romax or equal install Panel boxes. Wall [receptacles] & Toggel switches Hot water heater to be on individual circuit. Lights to be on individual circuit"

1985 As-Built Drawings of Stone House 28, Crater Lake National Park, by James A. Miller, Registered Architect

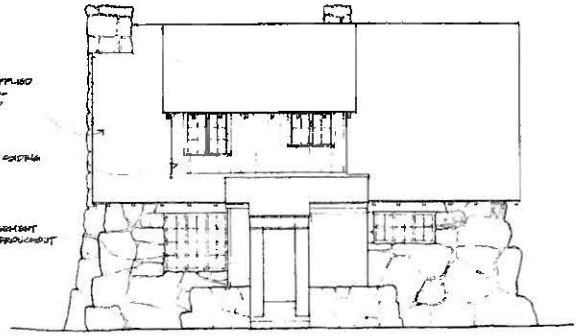


WEST ELEVATION

NORTH ELEVATION



EAST ELEVATION

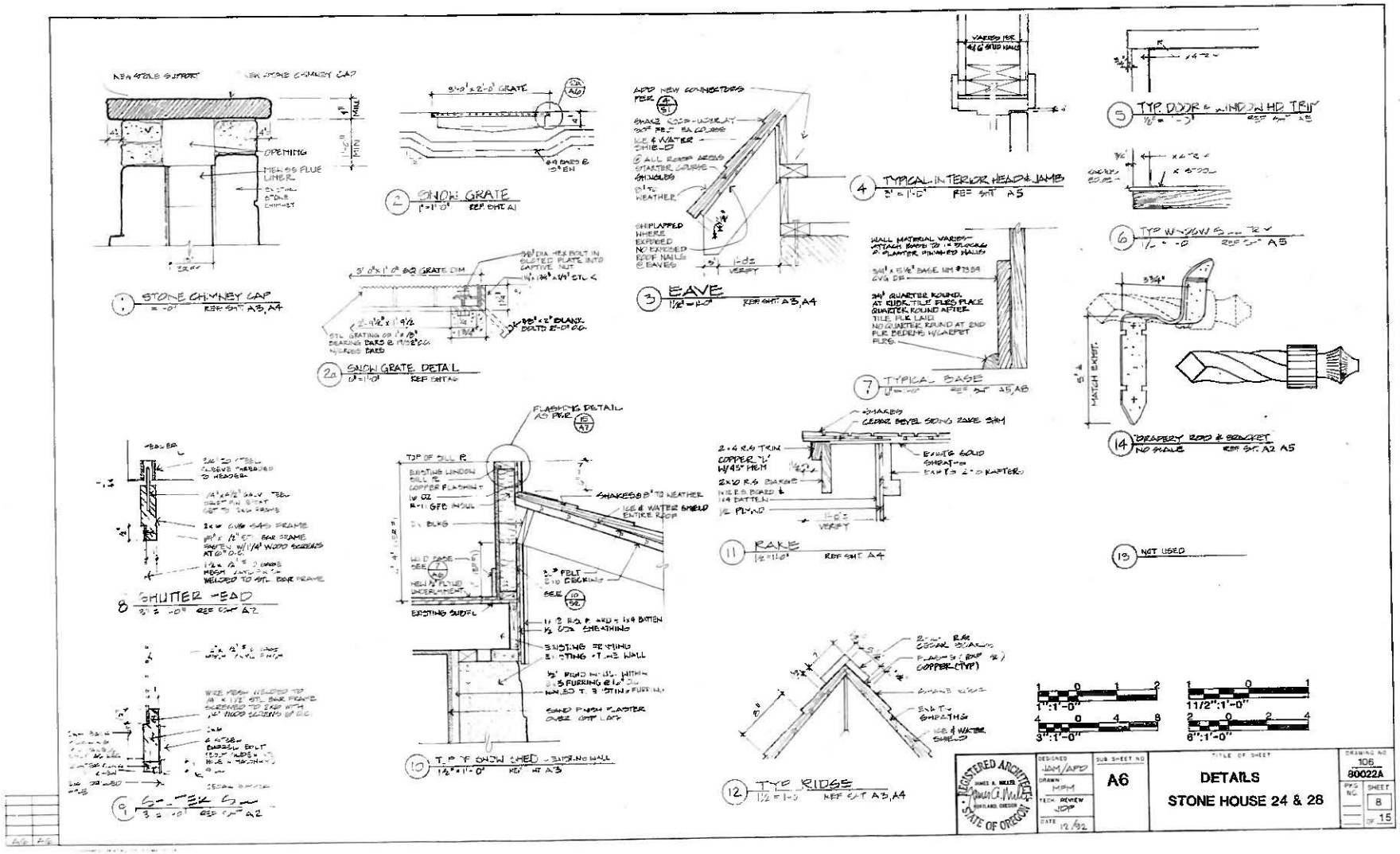


SOUTH ELEVATION

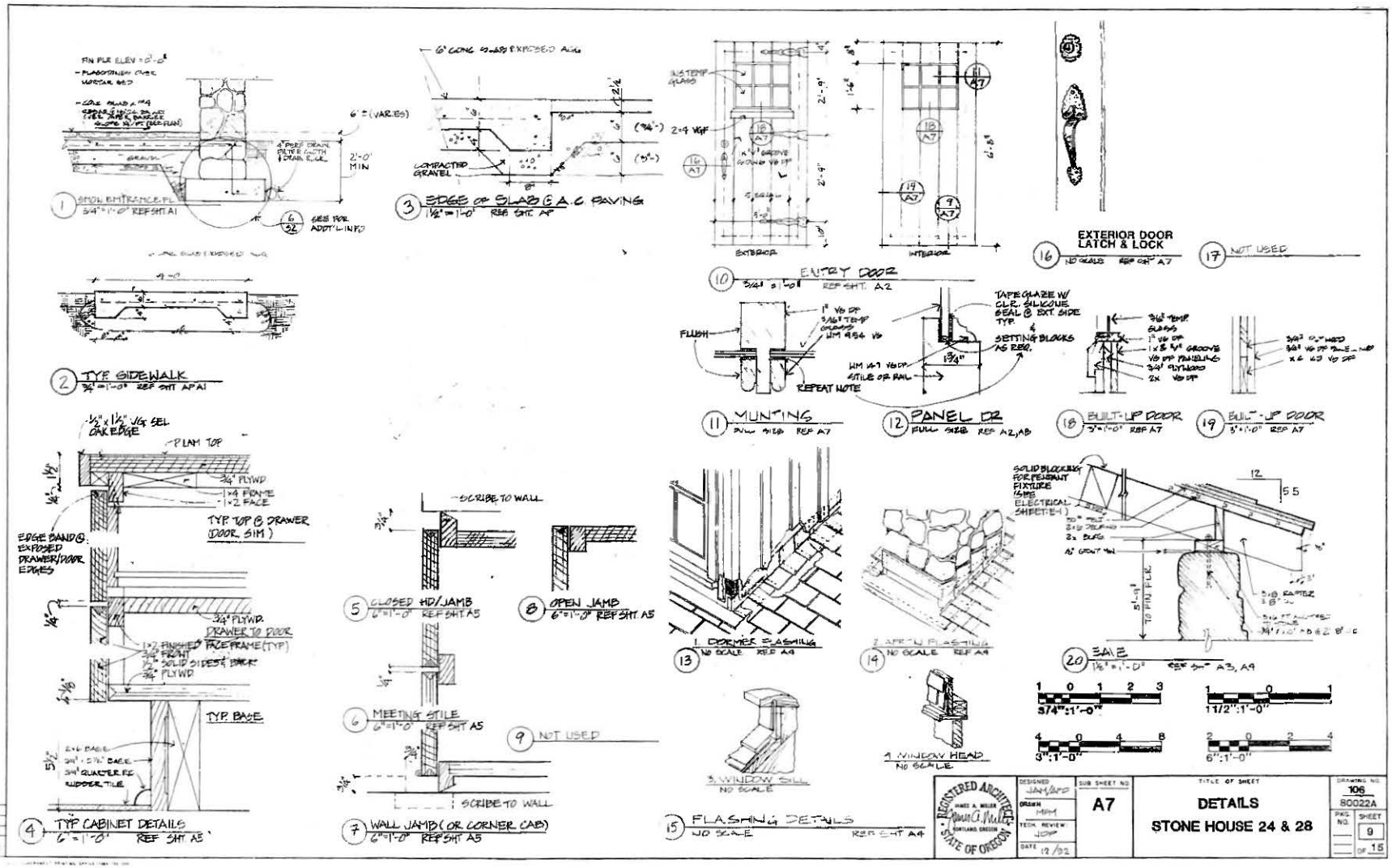
4 0 4 8
1/4"=1'-0"

DESIGNED	SUB SHEET NO	TITLE OF SHEET	DRAWING NO.
J.A.M./A.P.E.	AS2	STONE HOUSE #28 "AS-BUILT" ELEVATIONS	106 80022
DRAWN			PKG. NO. — — SHEET 4
TECH. REVIEW			OF 15
DATE 1/16/85			

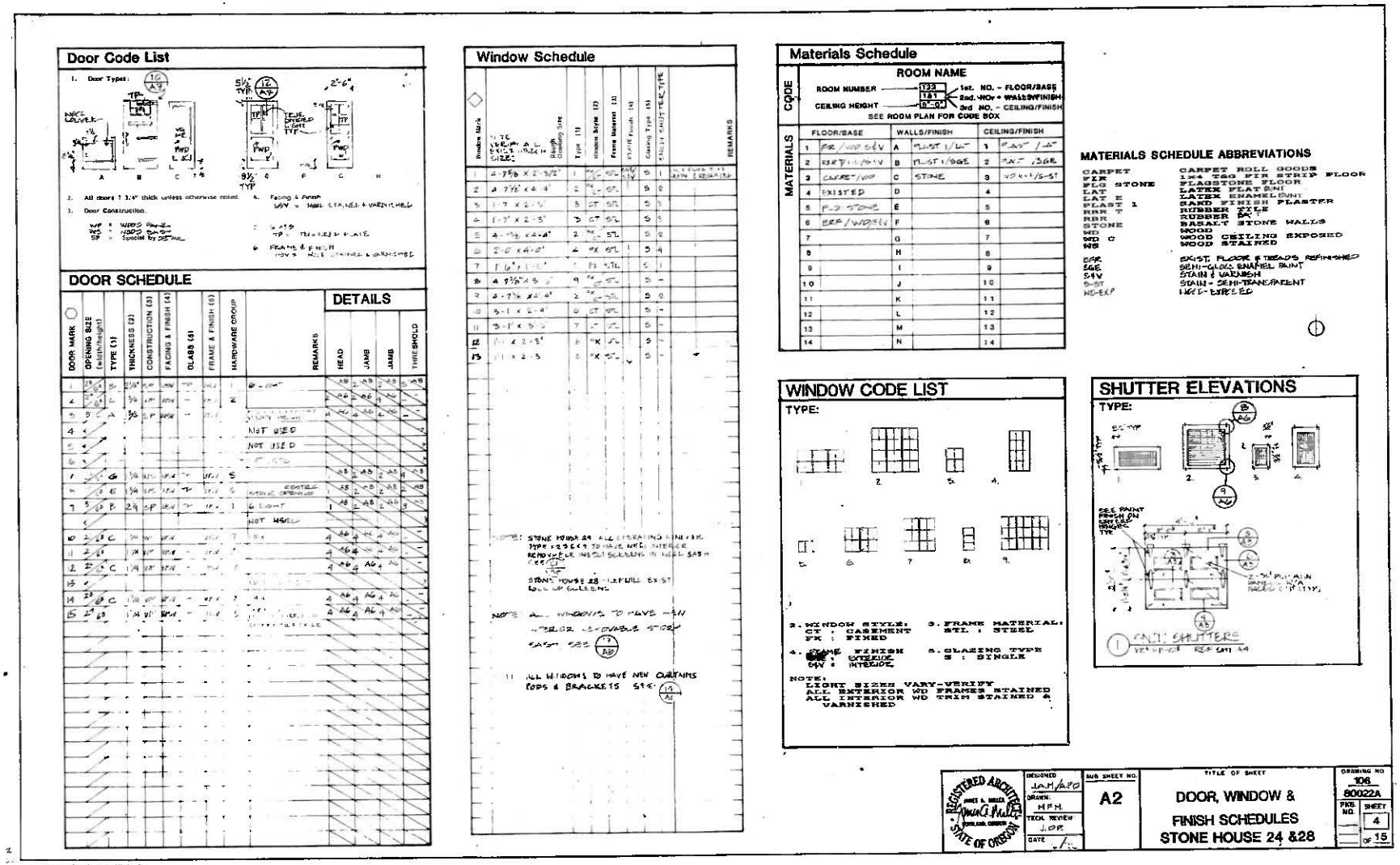
1992 Drawings of Stone House 25 Details, Crater Lake National Park, by James A. Miller, Registered Architect



1992 Drawings of Stone House 25 Details, Crater Lake National Park, by James A. Miller, Registered Architect



1992 Door, Window, and Finish Schedules for Stone Houses 24 & 28, Crater Lake National Park, by James A. Miller, Registered Architect



Door Code List

1. Door Types:

2. All doors 1 3/4" thick unless otherwise noted.
3. Door Construction.
4. Facing & Finish
5. Glass
6. Frame & Finish

DOOR SCHEDULE

DOOR MARK	OPENING SIZE (width/height)	TYPE (1)	THICKNESS (2)	CONSTRUCTION (3)	FACING & FINISH (4)	GLASS (5)	FRAME & FINISH (6)	HARDWARE GROUP	REMARKS	DETAILS HEAD	DETAILS JAMB	DETAILS JAMB	DETAILS THRESHOLD
1													
2													
3													
4									NOT USED				
5									NOT USED				
6													
7													
8													
9									6 LIGHT				
10									NOT USED				
11													
12													
13													
14													
15													

Window Schedule

Window Mark	Rough Opening Size	Type (1)	Window Style (2)	Frame Material (3)	Frame Finish (4)	Glazing Type (5)	Shutter Type	Remarks
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

NOTE: STONE HOUSE 24 ALL OPERATING WINDOWS TYPE 2 CASEMENT TO HAVE NEW INTERIOR REMOVABLE INSECT SCREENING IN WOOD SASH

STONE HOUSE 28 - REPAIR EXIST ROLL UP SCREENS

NOTE: ALL WINDOWS TO HAVE NEW INTERIOR LOCKABLE STOPS

11 ALL WINDOWS TO HAVE NEW CURTAINS RODS & BRACKETS SEE

Materials Schedule

ROOM NAME
ROOM NUMBER — 1st. NO. - FLOOR/BASE; 2nd. NO. - WALLS/FINISH
CEILING HEIGHT — 3rd. NO. - CEILING/FINISH
SEE ROOM PLAN FOR CODE BOX

CODE	FLOOR/BASE	WALLS/FINISH	CEILING/FINISH
1	FIR / WD SHV	A PLAST 1/ST	1 PLAST / ST
2	CERT / SHV	B PLAST / SGE	2 PLAT / SGE
3	CARPET / WD	C STONE	3 WD B-1/S-ST
4	EXISTED	D	4
5	FLG STONE	E	5
6	FIR / WD SHV	F	6
7		G	7
8		H	8
9		I	9
10		J	10
11		K	11
12		L	12
13		M	13
14		N	14

MATERIALS

MATERIALS SCHEDULE ABBREVIATIONS

CARPET	CARPET ROLL GOODS
FIR	1x4 T&G FIR STRIP FLOOR
FLG STONE	FLAGSTONE FLOOR
LAT	LATEX PLAT SNT
LAT E	LATEX ENAMEL PAINT
PLAST 1	SAND FINISH PLASTER
RBR T	RUBBER TILE
RBR	RUBBER BASE
STONE	BASALT STONE WALLS
WD	WOOD
WD C	WOOD CEILING EXPOSED
WD S	WOOD STAINED
EXIST	EXIST. FLOOR & TREADS REFINISHED
SGE	SEMI-GLOSS ENAMEL PAINT
SHV	STAIN & VARNISH
S-ST	STAIN - SEMI-TRANSPARENT
WD-EXP	WOOD - EXPOSED

WINDOW CODE LIST

TYPE:

2. WINDOW STYLE: CS : CASEMENT; FX : FIXED
3. FRAME MATERIAL: STL : STEEL
4. FRAME FINISH: EXTERIOR; INTERIOR
5. GLAZING TYPE: S : SINGLE

NOTE:
LIGHT SIZES VARY-VERIFY
ALL EXTERIOR WD FRAMES STAINED
ALL INTERIOR WD TRIM STAINED & VARNISHED

SHUTTER ELEVATIONS

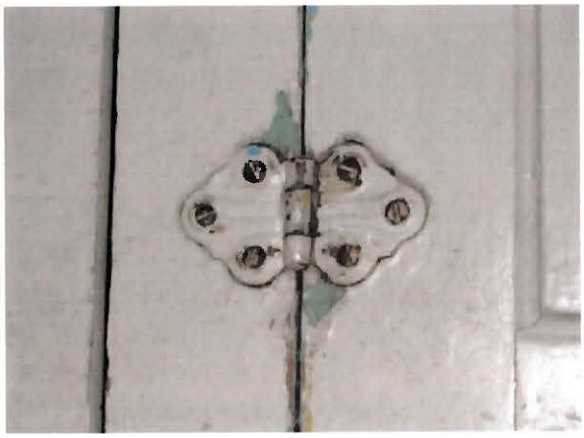
TYPE:

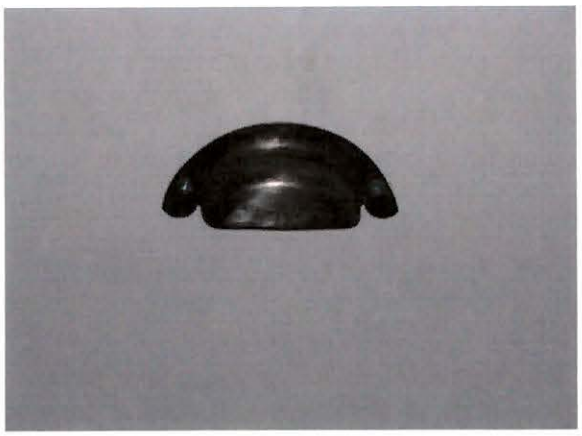
SHUTTERS

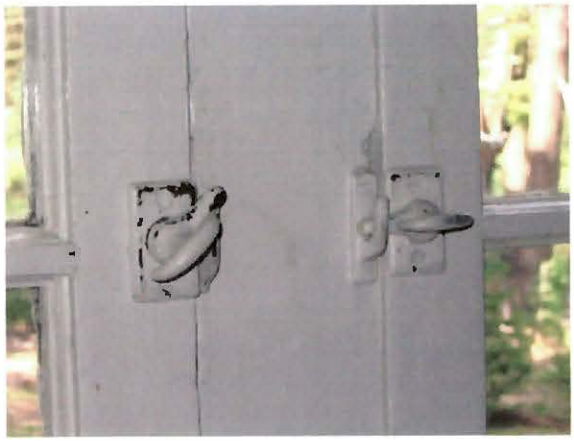
REGISTERED ARCHITECT — JAMES A. MILLER — STATE OF OREGON

DESIGNED	JAM/APD
DRAWN	MFH
TECH. REVIEW	JDP
DATE	/..
SUB SHEET NO.	A2
TITLE OF SHEET	DOOR, WINDOW & FINISH SCHEDULES STONE HOUSE 24 &28
DRAWING NO.	106
PKG. NO.	80022A
SHEET	4
OF	15

Appendix III: HARDWARE IMAGES







Appendix IV: MORTAR FORMULAS

2009 CRLA Mason's Mortar Proportions (measured by volume):

2 parts Portland cement
1 part lime
6 parts sand

1992 Specifications from Zaik/Miller/DeBenedetto Architects for Stone Buildings No. 24, 25, 28, renovation report, NPS Crater Lake Maintenance Archives, 4100-1.

Mortar Proportions (measured by volume):

A. Mortar for Stone Masonry in Contact with Earth, for Reinforced Masonry:
   1 part Portland cement
   1 part masonry cement
   6 parts sand
B. Mortar for Masonry Above Grade:
   1 part masonry cement
   3 parts sand
C. Mortar for Concrete Masonry Infills at Crawl Space Wall Vent Holes:
   1 part cement
   2 parts lime or lime putty
   9 parts sand

1932 Specifications for Superintendent's Residence and Naturalist's Residence

"The stonework shall conform in character to the stonework of the two Employees' residences constructed at Crater Lake National Park in 1931, and shall consist of rough finish, weathered surface native stone, laid in cement mortar composed of 1 part of Portland cement and 3 parts of clean, sharp sand."

(CRLA Museum & Archives, R679, Stack 150, 33: 10: 5, Box 887, NARA-DC)

Appendix V: REHABILITATION OF STONE HOUSE #31 COMPLIANCE DOCUMENT
30 August 2008

08/27/2008
Stone House #31 Rehabilitation
Prepared By: Bob Schaefer, Buildings Supervisor CRLA

WORK TO BE COMPLETED ON STONE HOUSE #31

General Conditions- Taken form the FFA Scoping Trip Report, October 16, 2007 for Crater Lake National Park, Stone House Building #31 and Hospital Building #34.

Building #31 was built in 1928 as one of 6 stone houses for park employees. This 16'x 26', two story building with crawl space was built at about the 6500' level of Crater Lake National Park and consists of wood framed roof and floor systems with stone exterior walls.

The exterior of Building #31 will be rehabilitated to preserve and repair its historic character defining features while improving the use of the existing building. The existing roofing material which is hand split sugar pine shakes will be preserved. The only significant visual change to the building will be the removal of the plywood snow shutters added in the 1990's and installation of wire mesh wood framed snow shutters that match the shutters installed on all the other historic buildings in the Munson Valley Historic District. Project boundaries are five feet beyond the exterior of the building walls. As evaluated, there are no historically sensitive finish materials on the interior of the building. Therefore, interior treatments will include extensive changes.

This building will continue to be used as seasonal park housing and will be tested and mitigated for lead, radon, and asbestos if they are found to be present.

Structural observations: Visual observation of the exterior did not reveal any significant cracking or settlements. No functioning foundation vents were noted. Visual observation of the inside was limited to wall and floor finishes as no structural elements were exposed. The 1st floor sags near the front wall and appear to have lost all support at the wall, most likely due to rot. Reportedly, the crawl space is very limited and damp from snow melt, no ventilation, untreated materials bearing on stone walls and no moisture barrier. Subsequent removal of a portion of the flooring materials revealed the entire flooring system is extremely rotted due to the conditions list above, see photos.

Vertical load analysis reveals that with a 50% unbalanced snow load on the building the dormer section roof rafters are overstressed more than 400%. This unbalanced load is caused by removing snow to keep the road open so that the buildings can be occupied in the winter. If this condition will exist it is necessary to reinforce the rafter system in these dormer areas with addition rafters, floor joist and plywood sheathing to walls that are part of any proposed improvements.

Exterior Building Work

- Install additional rafters and joist in dormer areas, and add plywood sheeting to walls that are part of any proposed improvements.
- Remove and replace all deteriorated exterior wood elements as necessary.
- Paint wood siding and trim, doors and frames. Paint to match the Brown and White shades used on Crater Lake Lodge.
- Bead Blast and Powder Metal Window Frames in place. Re glaze as necessary.
- Provide custom made storm windows
- Install new snow shutters of the same expanded wire / wood frame type used on all other Munson Valley Historic Buildings
- Repair or replacement of deteriorated doors
- Flood coat timber lintels at seats with preservative, or replace with treated materials set on a moisture resistant membrane; flood cut ends with compatible materials.
- Provide perimeter foundation drain as needed, deepen crawl space, provide moisture barrier and crawl space venting as described in the Crawl Space Section.
- Re point Chimney and Rock Walls as necessary. Provide permanent chimney cap that is of a very low and inconspicuous profile that blends in will with the existing stone work.
- Front Porch slab to be removed and stamped concrete slab with center drain to be installed. Re entry to have a 5' x 5' dry laid flag stone or brick landing installed.

Interior Building Work

- It has been determined by the regional park architect Lauren Huffman that there are no historically sensitive finish materials are on the interior of this building.
- Remove and replace with like or similar materials the structural support system and membrane of the first floor after the crawl space had been deepened.
- Replace first floor finish flooring in the living room, kitchen and mud room with 1 x 4 tongue and groove CVG Douglas Fir. Finish coat with a clear coat product.
- Replace bathroom finish flooring with sheet goods.
- Remove wall board, bead board, and ceiling tiles where ever necessary to install new electrical and plumbing work.
- Remove existing kitchen cabinets using lead safe work practice.
- Provide batt insulation of appropriate R value rating where ever possible.
- Install new drywall board, ceiling and side wall bead board, ceiling tiles, and wains cott to restore all wall finishes.
- After removal of existing finishes and repairing chimney, fur out even and install plaster board or sheet rock to chimney depending upon final selected finish.
- Replace carpeting on stairs with textured rubber tread.
- Install high pressure laminate counter tops with wood trim.
- Provide new window seat at dormer windows. Bench to be natural wood finish.
- Build and install new kitchen cabinets of the same style and pattern as existing cabinets for both sides of kitchen, that have a minimum separation between wall cabinets and floor cabinets of 16". Provide under cabinet lighting. Provide wall cabinets and the range side of the kitchen for installing exhaust fan. Use period look hardware.

Interior Building Work- continued

- Provide sconce lighting in dormers and on gable end walls.
- Remove existing closet adjacent to stair in south bedroom. Install new 36" high bookshelf/ storage/guard wall between stair and bedroom. Provide clothes hanging area along west wall with shelving above. Provide curtains along clothes hanging area and along north wall of south bedroom for privacy.
- Mirror this assemblage/ pattern of above for north bedroom so that there are no barrier walls between the "bedrooms". The curtains may be opened up so that there may be continuous line of sight making the room seem larger and free flow of air through the upstairs. Privacy will still be provided by screens or curtains.
- Take advantage of all tucked away spaces for storage by constructing small build-ins where ever possible. Same sort of utilization of space as you might see on a small sail boat.
- Provide furred out wainscot detailing at dining/living room, kitchen and bath. The top of this paneling to be high enough to be able to install lighting switches in the panels. This is necessary due to the stone walls. The panels will painted beadboard with a Douglas Fir top rails with a natural finish.
- All interior surfaces to be painted light and warm colors. Palette yet to be determined.

Plumbing

- All plumbing will adhere to latest edition of the National Plumbing code, and follows the "Draft" EPA'S Water-Efficient Single Family New Home Specification where applicable.
- Replacement of the ¾" water supply line to a 2" line with new control valve for the domestic and fire sprinkler systems.
- Replacement of all interior potable water piping and fittings with ¾" copper pipe which will supply the kitchen, bathroom and hot water heater. No laundry or exterior faucets will be provided.
- A cabinet style 30 gallon hot water heater will be installed.
- All hot water piping will be insulated at an R-4 minimum level.
- All plumbing fixtures will have angle stop valves or inline control valves.
- Kitchen, shower, and lavatory faucets will be bright chrome, non water staining finish with white porcelain cross style handles. Drains assemblies will be bright chrome where visible.
- The present bathtub will be refinished to original white color. Kitchen sink, toilet, lavatory basin will be replaced with new "white" fixtures. The lavatory basin will be a pedestal style unit and the toilet will meet the Water Sense high efficiency standards. The kitchen sink will be a self riming double sink.
- Replacement of all waste water piping, including soil stack with ABS material. New piping will connect to the existing sewer main approx. 3' foot in front of the facility.
- A waste water clean-out will be installed in the utility room.

Fire Sprinkler System

- All work will adhere to the latest version of NFPA 13R coeds for single residential dwellings.
- Dry pipe sprinkler system will be used.
- A design-build firm will be contracted to perform all aspects of the work.
- The sprinkler valves, controls, and compressor will be located in the utility room.
- Installation of reduced pressure check valve for the fire sprinkler system will be located in the utility room.

HVAC System

- All work will adhere to the latest version of NEC and NBC coeds for single residential dwellings.
- Electrical furnace will be mounted under the stairway, with insulated ducting feeding floor or wall registers in the kitchen, bathroom, living room, and the upstairs bedrooms. The ducting will be eternal to the walls or mounted in the craw space. The duct registers will be metal and flush mounted to either the floor or all surfaces. The cold air return grill will be located in the living room.
- A programmable thermostat located in the living room will control the furnace.

Crawl Space, Crawl Space Ventilation, and Crawl Space Sump Drain

- A humidistat controlled ventilation fan system with four negative pressure zones and one positive discharge duct will be located in the craw space. The Positive air discharge duct will exhaust at the south end of the building. Intake air will either be supplied through ducting in the chimney or by ducting through the building frame. Neither or which will be visible.
- The crawl space will be dug down to provide adequate space between bottom of girders and joist and prescribed by the IBC, > 12" to bottom of girders and > 18" to bottom of joists, and sloped gently toward the center of the building and a sump created. A 4 mil. Moisture barrier will then be installed.
- A sub pump with check valve located in the craw space sump. The discharge will be plumbed into the waste water line. Provide minor grading to produce positive drainage away from the building. A perimeter drain will be installed as necessary after observation of the area during the spring snow melt.

Kitchen and Bathroom Ventilation

- Each area will have a ceiling mounted exhaust fan with an independent control switch. Units will be selected to provide maximum efficacy with the lowest noise level. Flexible insulated ducting will be used, and will terminate exterior of the gable end of the building. The exhaust fan in the kitchen will be located directly above the range and in the bath room located in the center of the ceiling.

Electrical System

- Replace service panel.
- Replace all wiring (new circuits) to current code standards
- Replace all receptacles to current code standards; including GFCI & ArcFlash
- Replace all light fixtures and switches while maintaining historical look for exterior fixtures.
- Install new communication cabling/outlets in the two bedrooms and living room.
- Install communication cabling to support fire alarm system.

SOURCES AND CONTACTS

FLETCHER – FARR – AYOTTE – INC
STONE HOUSE 31 AND HOSPITAL 34
SCOPING TRIP REPORT – OCTOBER 16, 2007
KARYN GOODFRIEND
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STEVE MARK
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steve_mark@nps.gov

Crater Lake National Park

Project Management Division

National Park Service
U.S. Department of the Interior

Compliance Tracking Number:
PEPC Project Number:

PEPC Project Creation Form

Project Proponents: Please complete all questions in sections A thru G of this Project Initiation Form

A. PROJECT INFORMATION -ASSET 61634- ACCOUNT 9324-0802-MAL $265000-

Project Title: Renovate Deteriorated Historic Stone House #31

Estimated Start Date: _____ **PMIS #:** 112956 **Funded: YES**

Est. Completion Date: _____ **Estimated Projected Cost:** $265,000.00

Division: Maintenance **Funding Source:** Non-recurring, Deferred

Project Manager[1]**:** Bob Schaefer

Division Chief: Karl Bachman **Prepared By:** Bob Schaefer **Date:** 08/22/2008

Signature[2]**:** _____ **Date:** _____

B. LOCATION

Stone House Row 30 series, behind the Steele Visitor Center, Headquarters Area

Please be as specific as possible

C. PROJECT DESCRIPTION

Renovation would include replacing rotted floor joists and beams that abut the exterior stone walls, excavation of crawl space to at least 18" and adding ventilation, adding additional headers over existing doors and windows, repointing masonry joints, adding additional 2x10 floor joists to second floor, add 2x8 roof rafters at 16" centers to existing framing, replacing all electrical wiring and fixtures, upgrading plumbing and fixtures and updating heating system. All windows and doors would be refinished. All exterior finishes will match the original construction. The API for this structure is 68 and the current FCI is 1.864. Asset# 61634

D. PROJECT GOALS AND MEETING THE PARK'S MISSION

1) What is the purpose and need for the project (i.e. what problems will the project solve and why is it important)?
This structure was constructed over 50 years ago and does not comply with current building codes in all respects. They are used primarily for seasonal housing and are contributing elements to the Munson Valley Historic district. Renovation is needed to replace existing electrical wiring and plumbing that are currently in poor condition. Wiring has become brittle and requires frequent repairs to electrical fixtures. Safety concerns have been raised and some consideration is being given to discontinue use of this structure if wiring is not replaced with in the next 3 years. Structure is 632 sq.ft. that consists of a heavy stone veneer and heavy framing to with stand repeated heavy snow loading. Cost estimate is class C and comparable at $419/sq.ft., to recent contracted rehabilitation of a similar structures in the park in FY 2004-05. Stone House #19 at $543/sq.ft and Stone House #20 at $356/sq.ft.

---

[1] If the project comes from a concessioner, permit holder, cooperator, or partner, an NPS Project Coordinator is necessary; list the NPS Project Coordinator first, the partner Project Manager second (i.e., NPS PC/Partner PM)

[2] **Division Chief signature required. CRITICAL NOTE: Environmental planning and compliance will not proceed for the project until the *Project Creation Authorization Form* also has been signed by the responsible park Division Chief and a scanned PDF copy has been uploaded to PEPC.**

2) What park operational activities will this project address (e.g. road/trail maintenance, search and rescue, emergency medical services, law enforcement, fire management)? Be as specific as possible.
Seasonal Housing, Restoring Historic Structure, Critical Resource Protectrion Capital Improvement Need

3) Will this project further the protection of park resources and enhance visitor's experience? *If yes, explain below:* **YES**
By preserving critical resource

E. COMPLIANCE BACKGROUND

1) Do you believe compliance already has been completed? **NO**

Explain:

If available, provide compliance tracking number: _____ *And date of signature:* _____

2) Is the project explicitly called for in a completed (i.e., not draft) park planning document? ***MAY BE***

If yes, check next to plan: ☐GMP ☐YVP ☐MRP ☐CSP ☐ Other: _____

Provide page number(s) from the plan: _____

Environmental Planning and Compliance Office Comments, only:

F. ATTACHED INFORMATION (Careful, detailed documentation speeds up project planning and review.)

YES ☐ Maps: ***2 Required*** – 1: Showing location in the park; 2: Detailed close-up of the project area.
YES ☐ Drawings
YES ☐ Photographs
☐ Site Plans
☐ Non-NEPA/NHPA Approvals (Briefly list below, under "Additional Information"
☐ Other ____

Additional Proponent Comments / Information:

G. RESOURCE IMPACTS QUESTIONAIRE- DOES NOT APPLY

If you are uncertain about the answer to any of the following questions, consult with the Liaison or a specialist from the appropriate Division; you will save considerable time in the long-run.

If you answer YES to any question in the Resource Impacts Assessment section:
Consult with the appropriate SUBJECT MATTER EXPERT(s)
ANSWER ADDITIONAL QUESTIONS IN ITALICS
Describe any measures that will be taken to avoid or mitigate potential environmental impacts
Describe any impacts that cannot be avoided or mitigated to or below the level of "minor"

1. GOVERNMENT PROPERTY, FACILITIES, AND OPERATIONS

a) Will the project affect the interior or exterior of an existing building, facility, or structure (including roads, trails, and signs)? **YES-THE INTERIOR**

☛ ***Removal/demolition of a fixed asset requires*** *Board of Survey* ***(maybe McKinney Act); call Property Management***

☛ *Alterations or new construction to structures require fire/safety/building code & Federal Disabilities Act (FDA) review.*

Provide the Building Numbers (NPS#, DNC#, FMMS#) and address or identifying description

HISTORIC STONE HOUSE BUILDING #31

Give dimensions of the effect on the building: **16 FT X 26 FT**

Is the project routine repair? NO

Will the project cause a change in capacity or use? _____ *If yes, explain:* NO

b) Will the project involve construction of a new building, facility, or structure? *If yes, explain:* **NO**

NOTE: ☛*Alterations or new construction to structures require fire/safety/building code & FDA review*

c) Will the project involve a real property transaction (exchange, sale, or lease of land or structure? *Explain:* ☛ ***Sale of ANY fixed asset requires a Board of Survey; contact Property Management*** **NO**

d) Will the project interfere with or cause a change in any ongoing park or partner operations? **NO**

Explain: NOTE: ☛ *Consider FDA review*

e) Will the project change existing traffic/pedestrian flow or circulation? ☛ *Consider FDA review* **NO**

Which road(s) or trail(s) will be affected? _____

Describe changes (include duration, any increases in visitor use in an area, or driving hazards created):

2. NATURAL ENVIRONMENT (National Park Service Organic Act, National Environmental Policy Act)

a) Is the project expected to add emissions to the air (even temporarily)? **NO**

Describe expected duration, source, quantity, and type of emissions:

List any equipment or engineering controls:

b) Will the project disrupt soils? **SOME**

Give maximum possible depth, area, volume of disturbance? **36" DEEP 12" WIDE 150' LENGHT** 5' PERIMETER OF BUILDING

SOME MINOR TRENCHING FOR WATER LINES

Is the disturbance within a road prism? NO

Within a previously disturbed area? Describe the character of disturbance and when it occurred: YES

c) Will the soundscape change or the noise level increase as a result of this project? **NO**

Describe duration, source, time of day of any change, including intensity of increase in noise level:

d) Will there be a change in surface water flow? (e.g., storm water accumulation on paved or compacted surface; creation of depressions or ditches; change in surface grade, or slope direction) **YES**

Describe expected duration of any change in surface water flow, the dimensions of the affected area, and proposed controls (i.e., mitigation):SPRING SNOW MELT INTO CATCHMENT BASIN

e) Will the project impact any wildlife, wildlife habitat, or habitat features? **NO**

Describe expected duration of impact and list species, and habitat type and features affected:

f) Will the project modify existing wildlife behavior? (e.g., migration patterns, mating habits, avoidance or attraction to the project area) NO

Describe expected duration of impact and list species, and behavior affected: N/A

g) Does the project involve any permanent removal of plants? **NO**

Which species will be removed?

Describe the removal method (e.g., chemical or manual)?

Give dimensions of affected area?

Will it cause erosion? _____ *Describe the extent and any proposed mitigation:*

*Note: Compliance Document is longer, but all other answers to questions are NO.

TM RIPPEY
CONSULTING ENGINEERS

7650 SW Beveland St., Suite 100
Tigard, Oregon 97223
Phone: (503) 443-3900
Fax: (503) 443-3700

August 10, 2007

Ms. Karyn Goodfriend
Fletcher Farr Ayotte PC
Architecture Planning Interiors
520 SW Yamhill, Ste 900
Portland, OR 97204

RE: CLNP – Renovation of Building 34

Dear Ms. Goodfriend:

As per your request, we have made a preliminary structural assessment of the existing Building 34 located at the headquarters area of Crater Lake National Park. Our efforts to date include a site visit and scoping meeting on 07/11/07, review of the original building drawings (1940), review of the structural portions of the Renovation study completed in 1992 and a preliminary structural analysis of the existing structural systems. Following is a summary of our findings:

STRUCTURAL DATA: Building 34 was designed in the late 30's and early 40's as a hospital to serve the large number of workers in the Park at the time, however it wasn't constructed until the late 40's and has been occupied as housing since then. This 34' x 50', two story building with partial basement was built at about the 6500' level and consists of wood framed roof and floor systems with reinforced concrete basement and foundation walls as follows:

- ROOF – Corrugated metal roofing over existing shakes and straight sheathing over 2x8 rafters at 16" O.C. supported by wood frame bearing walls.
- 2nd FLOOR – 1x4 T&G flooring over 1x6 ship lap diagonal sheathing over 4x12 floor joists at 16" O.C. supported by wood framed bearing walls.
- 1st FLOOR – 1x4 T&G flooring over 1x6 ship lap diagonal sheathing over 2x8 or 2x10 floor joists at 16" O.C. supported by basement walls or a post and beam system at the crawl space.
- FOUNDATIONS – Exterior basement and foundation walls are reinforced concrete with a seat for stone veneer that was intended for the East and South sides. Interior foundation walls are reinforced concrete and isolated crawl space footings are concrete.

STRUCTURAL OBSERVATIONS: Based upon our visual observation of the exposed portions of the structure, we found the structural elements to be generally in fair condition with no visible signs of deterioration. Structural problems noted include:

- Several 1st Floor joists have been severely notched near the south wall of the present Laundry.
- The westerly end of the 1st Floor Hall slopes down to the exterior wall. No signs of distress were noted at the foundation for this area.
- Vertical and diagonal cracks were noted at the E & W walls of the 1st Floor Bathroom on the south side.
- Vertical cracks were noted at the 1st Floor wall between the Living Room and Kitchen.
- Water stains were noted where the Roof outlookers penetrate the E & W exterior walls.

- The 2nd Floor appears to slope down toward the exterior walls at the Living and Dining area which could have resulted from crushing of wood members during excessive snow loading.

PRELIMINARY VERTICAL LOAD ANALYSIS: We analyzed the existing framing systems for three loading conditions consistent with the Park's decision for seasonal occupancy, i.e. no floor Live Load in conjunction with the Snow Load. Please note that the Code (2006 IBC) calls for floor Live Load in combination with Snow Load. Loadings considered include 1. 40 PSF Live Load at living areas (seasonal occupancy), 2. Balanced Snow Load without floor Live Load (unoccupied) and 3. Unbalanced Snow Load without floor Live Load (unoccupied). The building consists of two framing systems, the end sections with a steeply pitched roof (12/12) from ridge to exterior walls and a middle section with shed dormers each side at a lower roof pitch (6-3/4/12) from the ridge to about 3' from the exterior walls. Due to the lower roof pitch, the snow load for the dormer section is much higher than for the end sections. Preliminary results are as follows:

END SECTIONS:

- All structural members are within allowable stresses for load cases 1 & 2.
- Rafters are overstressed about 10% for load case 3, however this condition with 125% of design Snow Load on half of the roof is very unlikely for this sheltered area and we feel the calculated overstress is acceptable.

DORMER SECTION:

- All structural members are within allowable stresses for load case 1.
- Floor joists and roof rafters are overstressed more than 200% for load cases 2 & 3.

PRELIMINARY LATERAL LOAD ANALYSIS: We analyzed the existing structure for current Code (2006 IBC) wind and seismic loads and found the existing diaphragms and shear walls to be relatively lightly loaded. Even though some of the existing elements (straight sheathed roof diaphragm and fiberboard wall sheathing) are not code recognized shear resisting systems, they do have value and have performed adequately for the life of the structure. We recommend that plywood roof sheathing be incorporated into the new roofing system and that plywood wall sheathing be added to all walls that are part of any proposed improvements.

STRUCTURAL RECOMMENDATIONS: Based upon our efforts to date, we recommend structural upgrades as follows:

- Add joists at severely notched 1st Floor joists.
- Upgrade the snow load capacity at dormer areas by adding roof rafters and 2nd Floor joists or provide additional bearing walls as part of a new layout for future housing.
- Add plywood sheathing as part of the new roof system.
- Add plywood sheathing to walls that are part of any proposed improvements.

Please call with any questions.

Sincerely,

Charles J. Conlee, PE
TM RIPPEY
Consulting Engineers

CC: File – CLNP.34.INV

Appendix VI: MUNSON VALLEY HISTORIC DISTRICT STATEMENT OF SIGNIFICANCE[3]

The Munson Valley Historic District was listed in the National Register of Historic Places in 1988 as part of a multiple resource nomination for Crater Lake National Park. The following statement of significance and integrity draws on information from the National Register nomination form, a Historic American Building Survey report documenting the district, and the "Analysis and Evaluation" section of this document.

Although Crater Lake was established as the nation's sixth national park in 1902, development of an administrative headquarters for the park did not occur until 1926. During this time, a camp located in upper Munson Valley and used by the Corps road crews, gained increased use as summer headquarters for National Park Service employees. Over the next fifteen years at the Government Camp site, the park embarked on one of the most ambitious rustic architecture programs ever undertaken by the National Park Service. Designers transformed an open landscape of infertile pumice soils into an administrative complex comprised of three distinct areas of use. Native stone building construction, use of indigenous plant materials, and careful siting of structures resulted in a highly manipulated designed landscape that was "naturalistic" in character.

Landscape architects Thomas Vint, Merel Sager, and Francis Lange were key practitioners of the Rustic style and influential in shaping the Munson Valley landscape. Their drawings, photographs, and monthly project completion reports provide a wealth of detailed formation about the site's development and insight into the philosophy of non-intrusive design known as Rustic. Landscape architects Sager and Lange directed general construction and landscape work on the site using Civilian Conservation Corps and Emergency Conservation Work crews. Their responsibilities were far-reaching ranging from design and construction supervision of trails and grading, and finishing portions of Rim Drive, to supervising major construction projects at the Rim and Munson Valley. The park's "naturalization" program, instituted by Sager, was implemented throughout the park, creating a consistent and cohesive appearance in all the developed areas. Lange continued implementation of the program through additional planting and maintenance of those materials.

By 1941, the Munson Valley area was "home to the most concentrated and coherent expression of Rustic Architecture in the park." The structures and related landscape formed one of the most extensive developments ever undertaken by the Park Service using this type of naturalistic design.[4]

The Munson Valley Historic District, designed and built between 1926-1941, is significant as a historic designed landscape under National Register Criterion A: for its association with events that made significant contributions to the broad patterns of history; under Criterion B: for its association with the lives of persons significant in our past; under Criterion C: for the distinctive characteristics of a type, period or method of design; and under Criterion D: for the important historic information the site has yielded and is likely to yield.

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[3] Cathy Gilbert & Marsha Tolon, "Cultural Landscape Recommendations: Park Headquarters at Munson Valley, Crater Lake National Park, 1991. (Accessed 8/25/2009 <http://www.nps.gov/archive/crla/munson/munson4.htm>)

[4] Stephen Mark, *Munson Valley's Designed Landscape* (Historic American Building Survey No. OR-144) 1990, 1.

CRITERION A:

Munson Valley is integrally linked to efforts by the National Park Service to develop, manage and protect the natural recreational resources of one of our oldest national parks. Extant landform and major features, such as stone curbing, trails and roads both contribute to the rustic character of the district. Enough components of the designed landscape survive to demonstrate the nature of park planning and construction of the rustic idiom developed during the late 1920's and 1930's which strove to tie rustic-style buildings to their environment. Landscape design development and construction of park headquarters by PWA and CCC crews is representative of a major expansion period in the National Park System made possible under the Hoover administration in the early 1930's and by the New Deal public works programs.

CRITERION B:

The comprehensive expression of Rustic architecture and naturalistic design principles at Munson Valley is in large part due to the early site planning and design development directed by three NPS landscape architects, Thomas Vint, Merel Sager and Francis Lange. Under Vint's direction and influence as chief landscape architect, the Rustic Style and its associated design ethic was brought into national parks throughout the system. Vint was specifically responsible for planning the developed areas in the western national parks and monuments. At Munson Valley early development of Rustic architecture is demonstrated by the extant warehouse, constructed as a result of Vint's 1925 plan for a summer headquarters.

Vint hired Merel Sager to prepare and implement NPS plans for western parks, including Sequoia, Lassen and Crater Lake National Parks. Incorporating the tenets of the Rustic Style, Sager coordinated and directed the construction of large developments at Rim Village and Park Headquarters. Massive boulder construction of headquarters structures characterize the work of Sager, who also oversaw the revegetation and siting of structures and trails. Sager's work provides a design link between developed areas within the park and other parks in the region, including Oregon Caves National Monument. After Sager's direct supervision of Crater Lake construction ceased, his National Park Service career (1928-1953) included a term as chief of Park Planning in National Capitol Parks and as chief landscape architect for the overall park system.

Francis Lange, who began as Sager's assistant and continued as resident landscape architect in the park from 1934 to 1940, had significant impact on the appearance of Park Headquarters. Using PWA and CCC workers, Lange continued the planting program implemented by Sager; designed detail site features and most of the site's now non-extant rustic signs; and began efforts to better adapt Munson Valley structures to winter conditions. Under Lange's direction the designed landscape of Munson Valley Historic District was virtually completed.

CRITERION C:

The designed landscape of Munson Valley is significant nationally as an expression of naturalistic design developed and employed by the National Park Service from the mid-1920's to the early 1940's. The style, commonly referred to as the Rustic Style or NPS Rustic, influenced state park systems and national forests throughout the country. In western mountain parks, buildings were constructed of native materials and incorporated local colors, shapes, and textures: building forms were designed to suit local conditions and environments, and were sited to blend into the surrounding landscape. At Munson Valley, larger site planning efforts and design detailing successfully blend the overall physical development with the natural setting. Principle features of the designed landscape at Munson Valley are: structures sited against a

forest backdrop with the appearance of little disturbance to the natural topography, and the economic as well as aesthetic use of native plant materials to present a highly naturalistic looking landscape in terms of massing and grouping. Enhancement and development of views meld key concepts of the Rustic style and naturalistic design into a cohesive landscape composition.

CRITERION D:

The Munson Valley landscape yields important information about the precepts of naturalistic planting design theory and practice as used at Crater Lake National Park. Landscape features of the administrative complex and Superintendent's Residence include spatial organization, site plan, views and visual character all of which remain largely undisturbed. These resources contribute significant information relating to estate (residential) planning concepts prevalent in the 1930's. In addition, the use of native plant materials and natural groupings, and the materials, colors and textures of structures contribute information relating to naturalistic design principles as part of the rustic idiom developed in national parks.

The historic designed landscape of the Munson Valley Historic District possesses integrity of:

Location: The primary structures defining the administrative, maintenance and residential complexes at Munson Valley, including the buildings, circulation system, and vegetation (canopy cover), are in their original location.

Design: The original spatial organization for this site, including land use functions (residential/administration/maintenance) and activities is intact. Though many plant materials have been lost over the years due to natural processes and/or lack of maintenance, the framework of the original planting scheme is still evident.

Setting: The landscape surrounding the Munson Valley Historic District remains virtually intact. From Rim Drive the administrative complex remains visually prominent, and the district's mature forest continues to screen the maintenance and residential structures from the public. The Steel Circle employee housing development, built in the 1960's south of the historic district, is physically separate and does not visually impact the main site. Views to Garfield Peak from the Superintendent's Residence and other areas within the site remain unobscured.

Materials: With the exceptions of snow tunnel additions to the Administration Building and the Ranger Dormitory, and replacement in-kind of building materials during a recent rehabilitation project, structures in Munson Valley remain intact. Existing plant materials are compatible with the historic site although the original plantings are in remnant condition at best.

Workmanship: The buildings of the Munson Valley district are an excellent example of rustic architecture in the park, and represent one of the National Park Service's most ambitious development programs using naturalistic design to guide the improvements.

Feeling: The historic district possesses a distinct presence within the greater landscape context, evoking a sense of the era in which it was designed and created through its buildings, structures, circulation system, materials and organization.

Association: Munson Valley continues to function as it did historically, as headquarters for Crater Lake National Park. The historic district continues to reflect its associations with the CCC and the Rustic Style of design through its buildings, structures, circulation system, materials and organization.

VII: THE SECRETARY OF THE INTERIOR STANDARDS FOR REHABILITATION

Ten basic principles created to help preserve the distinctive character of a historic building and its site, while allowing for reasonable change to meet new needs.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Appendix VIII: LOCAL RESOURCES

National Trust for Historic Preservation

www.preservationnation.org

Oregon State Historic Preservation Office

Joy Sears, Restoration Specialist
Phone 503-986-0688
Fax 503-986-0794
725 Summer Street NE, Suite C
Salem OR 97301
Email: Joy.Sears@state.or.us:
www.oregonheritage.org

Lath and Plaster Contractors

Ashland Plastering
Mike Ross
Ashland, OR
541-535-6469
Exterior Stucco and Interior plastering; repair and restoration; over 35 years experience -- Licensed and Bonded CCB# 104326

Professional Lathe and Plaster, LLC
Mr. Nathaniel Hartley
Portland, OR
925-207-2899 (cell) 503-289-2307 (message only)
e-mail: hartleycreationsinc@hotmail.com
26 years experience -- All phases of interior and exterior lath and plaster. Also Venetian plaster, ornamental and flat plaster, thin wall over blue-board. CCB# 173490

Wayne Thompson, Inc.
12480 S.W. 112th Ave
Tigard OR, 97223
503-639-4437
CCB# 8816 -- All Phases of lathing, plastering, plaster restoration and stucco

Mortar Analysis

SHN Consulting Engineers and Geologists
Dave Gonzales, Laboratory Manager
Email: dgonzales@shn-engr.com
812 W. Wabash Ave.
Eureka, CA 95501-2138
707-441-8855
http://www.shn-engr.com/

Materials & Salvage

Building Materials Reuse Association
Oregon Directory
http://www.ubma.org/directory/oregon

Aurora Mills Architectural Salvage
Mr. Mike Byrnes, Mr. Clark Pope
14971 1st Street NE
Aurora, OR 97002
Phone: 503-244-0012
Fax: 503-244-1802
www.auroramills.com

BRING Recycling
Planet Improvement Center; Used Building Materials Warehouse
4446 Franklin Boulevard
Glenwood, OR (between Eugene and Springfield)
Phone: 541-746-3023
Fax: 541-726-9894
www.bringrecycling.org

Cashway Plywood & More
1120 S. Spring St
Klamath Falls, OR 97601-4201
(541) 884-4913

Ecohaus
819 SE Taylor Street
Portland, OR 97214
Phone: 503.222.3881
Fax: 503.222.3756
www.ecohaus.com

Heartwood Resources
355 Atlanta St
Roseburg, Oregon 97470
541 673-4070
http://www.heartwoodresources.org/

Hippo Hardware
1040 E. Burnside
Portland, OR 97214
503-231-1444
www.hipponet.com

House of Antique Hardware
Portland, OR 97214
Phone: 888-223-2545, 503-231-4089
Fax: 503-233-1312
www.houseofantiquehardware.com

Morrows Used Building Materials
Early 20th Century Salvage
2784 W. Main
Medford, OR
541-770-6867

The ReBuilding Center
3625 N. Mississippi Ave.
Portland, OR 97227
(503)331-1877
www.rebuildingcenter.org

Rejuvenation
1100 SE Grand Avenue
Portland, OR 97214
503-238-1900
www.rejuvenation.com