CATOCTIN FURNACE
DOUBLE LOG HOUSE

A HISTORIC STRUCTURE REPORT

Prepared For

THE CATOCTIN FURNACE HISTORICAL SOCIETY

By

PRESERVATION ASSOCIATES

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June, 1977

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Funds for this study are included as a portion of the overall cost of the initial restoration of the double log house payable upon receipt of monies for said restoration. In case the restoration does not take place, the cost of this study shall be born by the Catoctin Furnace Historical Society.

FORWARD

The following report on the double log iron worker's house at Catoctin Furnace is a preliminary study which has been compiled in preparation for the complete restoration of this building.

The report is divided into sections beginning with an analysis of the building's history based upon observable evidence recorded during the initial on-site examination. The study then discusses architectural demolition and dismantling of certain work necessary prior to restoration, enabling the structural history and condition of the building to be studied in much greater detail. A proposed restoration plan is then outlined with suggested phases of work listed according to priority followed by a recommended procedure for implementation of the plan and a cost breakdown.

While it is possible that certain aspects of this preliminary report may change slightly as work progresses, particularly with regard to the structural analysis of the building, the cost itemization remains essentially stable and should not be altered greatly by any new physical evidence which may be brought to light.

A final report will be submitted as part of Phase I of the restoration. It will include a complete structural analysis of the house, revising where necessary the preliminary study should any additional evidence be found. The final report will also

have complete photographic illustrations. Interior features will be discussed in detail with emphasis on the original placement and appearance of all partitions, doors and windows, as well as an analysis of original paint. Interior finishes for the final stages of restoration will be recommended. Also proposed will be the replacement of the front porch and the picket fence which once ran in front of the house.

We hope that this report is informative and provides guidance in the initial stages of this important restoration project.

Preservation Associates
June 27, 1977

TABLE OF CONTENTS

STRUCTURAL ANALYSIS

The iron worker's house at Catoctin Furnace located on the east side of Maryland Route 806, old Route 15, is a two story, three bay log structure resting on low fieldstone foundations. Attached to its north end is a two story, two bay log addition. The building is situated on low-lying ground and faces west slightly below the grade of the highway.

EXTERIOR

The front or west, south and east elevations display their log construction which has been coated with numerous layers of whitewash. There is no evidence of these walls having had any other form of sheathing. Most of the logs are oak, hewn on two sides. They are joined at the corners with "V" notching, a prominent type of construction in Maryland and Pennsylvania. Thirteen logs were observed in the front elevation with a fourteenth log, the sill, missing and presumably rotted away. The addition post into which the logs of the north two bays are mortised is anchored to the main section with an iron pin. The pin has shifted indicating that the addition has sunk several inches. A one story shed roofed porch spans the front elevation.

Fourteen logs are exposed in the south end wall. Prominent in this elevation is the stone chimney back exposed in the central portion of the wall just above ground level. Such chimney construction in log houses tends to be associated with eighteenth

and early nineteenth century construction. Above the plate the gable is sheathed with German siding.

The east or rear elevation has early twentieth century frame additions to each of the log structures.

The north end wall is completely sheathed with one-half inch thick pine siding of random width four to six inches wide with an overlap varying from one-fourth inch to one inch. The horizontal siding is nailed to furring strips with cut nails using one nail per board over each strip.

Openings are framed with rough lumber and finished with plain board trim which appears to date from the early twentieth century. Two over two pane double hung sashes have replaced the original windows in the front elevation of the south or earlier section while the addition retains six over six pane sashes in its front wall. Two over two sashes are used in the south elevation and single pane sashes are present in the north end wall. In the east elevation a six over six window is present in the south section and one six pane window in the north addition.

The south section has two front doors located side by side in the first and second bays from the south end. The entrances are framed and trimmed similarly with the center opening having a mid-nineteenth century board and batten door. The southernmost door with a large glass pane dates from the twentieth century. Framed against the addition post is the main entrance into the north section. It holds a four panel door of which the upper two panels have been replaced with glass. Other entrances are located in the rear elevation of the log structures approximately

opposite those in the front wall.

The entire building is roofed with sheet metal which covers earlier wood shingles. The south section has a channel drain tin roof on the west slope while the remainder is standing seam tin. The ends of the rafters are exposed at the eaves. Chimneys are located inside the end walls. The original stone chimney inside the south gable end has been rebuilt with brick from the second floor level and finished with a corbel. The chimney inside the end wall of the addition is entirely of brick construction.

INTERIOR

FIRST FLOOR, MAIN HOUSE

The interior of the main house at the first story is divided into three rooms, each with its own exterior door. The floor plan, whether or not original, follows standard Germanic traditions having a large kitchen with the fireplace taking a major portion of the first floor. The remainder of the house is divided into two rooms by a north-south partition. The inside surface of the log walls, where observed, was coated with whitewash indicating that this was the original interior finish. There is also evidence of fire damage in this portion of the house. The first floor was originally supported by joists hewn on one side, resting on the inside edge of the top of the foundation. They were not set into the sill logs by any means of notching.

The kitchen or south room (room 1) was totally refurbished in the twentieth century and has wall board sheathing the walls and ceiling. One inch by six inch tongue and groove pine wains-

coating has been put on the north and east walls. Windows and doors have plain 7/8" x 4-1/2" butt jointed trim. The major feature in the kitchen is the fireplace. The chimney from floor to ceiling is of plastered stone. The fireplace opening has been covered with random vertical boards. Inside the fireplace is an iron crane, but it appears too large for the width of the flue and is not attached to the chimney. A horizontal bar is set into the throat of the chimney. There is evidence of a narrow winding stair which rose to the upper level in the southwest corner of the house next to the chimney. This is a typical stair location in many early houses.

Room 2, probably an original parlor, is divided from the kitchen by a modern stud partition. The jamb for door #205 shows extensive termite damage. Although further examination is required to determine whether it follows an original partition, a wall in this location is consistent with typical floor plans of the eighteenth and nineteenth centuries. Like the kitchen, this room retains little original work having been remodeled extensively at various times during the twentieth century. The board and batten exterior door (#206) which is presently nailed shut gave this room a separate exterior entrance. An enclosed winding stair has been installed in the northwest corner of the room. Beneath the rough plastered wall, immediately east of the stair, was found a door (#210) which led to the addition. Dating from the late nineteenth or early twentieth century, the door had horizontal panels and was cased with beaded trim having a back band. The present particle board floor dates after the mid-twentieth century.

Room 3, a small area at the northeast corner of the house, is divided from room 2 by a vertical board partition which is plastered on its west side. This room retains more nineteenth century woodwork than any other part of the first story in the main house. The floor, however, has been replaced with one inch particle board and is in poor condition. In the north wall of this room is an original exterior door which later opened into the addition. It displays original red and blue paint, red being the first coat on the casing with deep blue applied above. The entire door is red. The door trim is pine, 1" x 2-3/4" with mitered corners and a one-half inch bead at the inside edge. In the east wall of the room is another door which now enters into the twentieth century one story addition that extends the length of this portion of the house. The door appears to date from the mid- to late nineteenth century and has a hand-made Suffolk latch. Original dark grey-blue paint can be seen on the baseboards which are 1" x 6" with a half inch bead at the top edge.

SECOND FLOOR, MAIN HOUSE

The second story of the south section also has three rooms. Room #4 in the southwest corner appears to have been a stair area at one time, its major feature being a rectangular patch in the floor along the south wall where the earlier stair rose from the kitchen. Projecting into the room is the flue which is much narrower than the wide stone chimney at the first floor. Here it is of brick construction and continues as brick through the attic to the exterior. It appears that the brick portion of the chimney

is a reconstruction. There is no evidence of there having been a fireplace in this room.

The inside surface of all exterior walls at the second story is of rough plaster over split lath secured to the logs with machine-made nails. When sections of this plaster were removed, evidence was revealed which suggests that the house was raised from one and a half to two stories. The lower logs from the floor level to about thirty inches high are whitewashed, while those forming the rest of the second story height are not. The top plates are also whitewashed. The absence of whitewashed logs at the upper level of the second story and the rebuilt chimney are strong indicators that the house originally had one and a half stories with the interior wall surfaces covered with whitewash. During the mid-nineteenth century the height of the structure was extended and the chimney rebuilt and lengthened with brick. Apparently the whitewashed top plates of the one and a half story structure were reused in the enlarged building. Since the newer logs show no evidence of having had whitewash, it is likely that lath and plaster were applied to the interior of the house at the time it was raised. The addition of the full second story would also account for the height of the ceilings there which is much greater than that at the first floor level.

Room 5 in the northwest portion of the original structure includes the present staircase from the first floor. At the head of the stair in the north wall is a board and batten door (#517) leading into the addition. The door shows the imprint of a Norfolk latch which had been set above an earlier cusped latch. It

has one inch thick, double beaded edge jambs dating from the late nineteenth century. Similar jamb treatment has been applied to the room's one window (#518) and is used around other windows (#414 and #620) in the west and east walls at the second story. The floors as elsewhere in the second level are of tongue and groove random width pine boards which have been patched numerous times. The outer edge of the floor was painted dark brown.

Room #6 is long and narrow extending the entire length of the rear of the main house. The floor in this room is bowed and the door between it and room #4 has settled several inches.

The attic of the south section displays 2½" x 8" water power sawn joists and fourteen foot rafters joined with an open mortise and tenon joint at the peak. Nailers at the north end of the south section are weathered, due to exterior exposure, indicating that the north addition was built several years after the original house was raised in height.

ADDITION - FIRST FLOOR

The two story log addition consists of one room divided north to south by a twentieth century vertical board partition. A twentieth century one story room most recently used as a kitchen was added to the rear of the log structure.

Room #7, the front or west portion of the log addition, has rough plaster walls with numerous coats of paper and paint which had completely covered the chair rail. The remaining chair rail is four inches in width with a bead at the lower edge. The top piece has been removed. The main door (#721) in the west wall

has a plain three piece architrave to which has been applied cove molding. The door leading from room #2 has been permanently closed by the addition of baseboard across its lower edge and by the partition between rooms #7 and #8 which extends into its surface. Window #722 in the west wall has beaded casing with molding matching that of the main door. An early twentieth century hanging light fixture is suspended from the ceiling.

Room #8 contains a narrow staircase to the second floor and a fireplace. The fireplace has been divided by the partition between the two rooms. Apparently, at the time the partition was installed, the fireplace was made smaller and trimmed with a low shelf and a doored opening into the firebox. Beneath this treatment is the original chimney trim consisting of a mantelpiece which appears to date from the third quarter of the nineteenth century or later. Its principal remaining decorative feature is a long, narrow, raised beveled panel. The mantel shelf is missing. The window in the north wall (#825) is treated similarly to the others in the north end. Badly deteriorated logs beneath this window and other openings in the north wall show extensive water damage. The floor in this room was raised two inches above the original base.

ADDITION SECOND STORY AND ATTIC

At the second story the floor plan is similar to that of the first floor with a vertical board partition of one inch thick random width pine dividing rooms #9 and #10 as well as the door (#517) which once led to the earlier house. The walls of both

rooms are of rough plaster over hand split lath nailed to the logs. A newer wall separates room #9 from the stair case. It is of rough 2" x 4" studs to which sawn lath and plaster have been applied.

The attic of the addition has fourteen foot oak half-lapped rafters at the peak. The rafters were taper sawn and were cut to match the earlier rafters of the main house roof.

CONCLUSION

Evidence yielded from the preliminary examination of the house suggests that a one and a half story, three bay log house with an inside end stone chimney was the original structure on this site. Apparently it had no exterior or interior covering for its walls other than whitewash. It may have had a three room first floor plan similar to the existing arrangement. The exact construction date for this original structure can not be determined from information available at present, since much of the original work has been destroyed during the various remodelings. However, the chimney construction at the first story level is original and is generally associated with early nineteenth century buildings, suggesting that the one and a half story house may have dated from the first quarter of the nineteenth century.

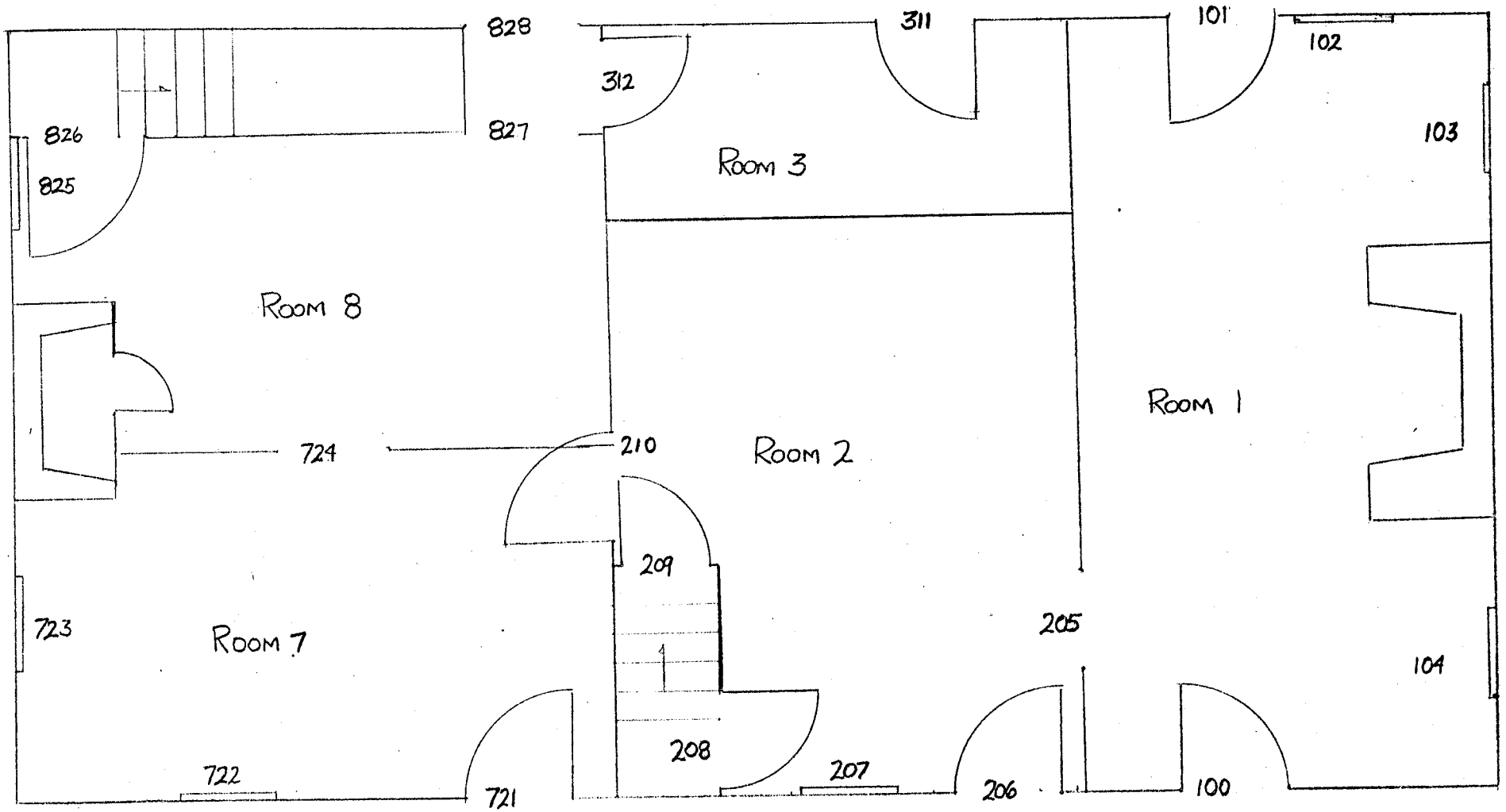
Baseboards, door trim, and much other pre-twentieth century woodwork remaining in the south section date from the mid-nineteenth century, suggesting that a major renovation took place at that time. The full second story was added, the interior walls lathed and plastered, and the chimney rebuilt with brick above

the first story level. It can not be determined from information available at present whether or not the existing second story windows are in their original locations. The weathered nailers in the attic indicate that the three bay, two story house stood for some years before the addition was built.

Original woodwork in the addition dates from the third quarter of the nineteenth century or slightly later indicating that the north section was constructed at that time.

Both sections of the house underwent extensive renovation during the early twentieth century, probably after 1923 when the house was separated from the furnace tract. The present front porch dates from this period but may have replaced a similar earlier structure. Ca. 1930 photographs show a white picket fence running in front of the house.

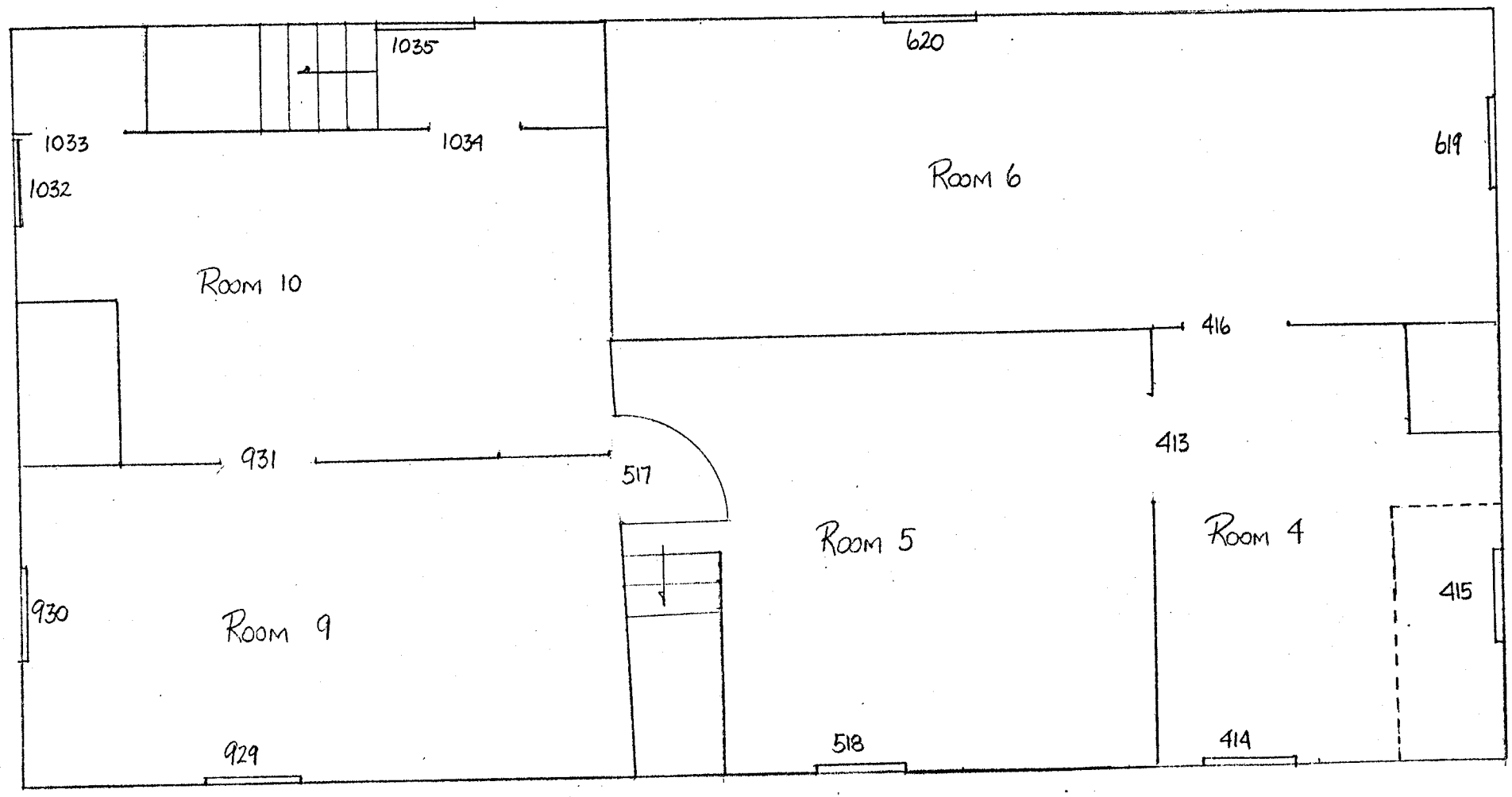
The general condition of the house is fair with most deterioration being the result of water damage or the dampness of the ground beneath the house.



Iron Worker's House
Catoctin Furnace
Frederick County, Maryland

First Floor Plan
Scale: 1/4" = 1'
N

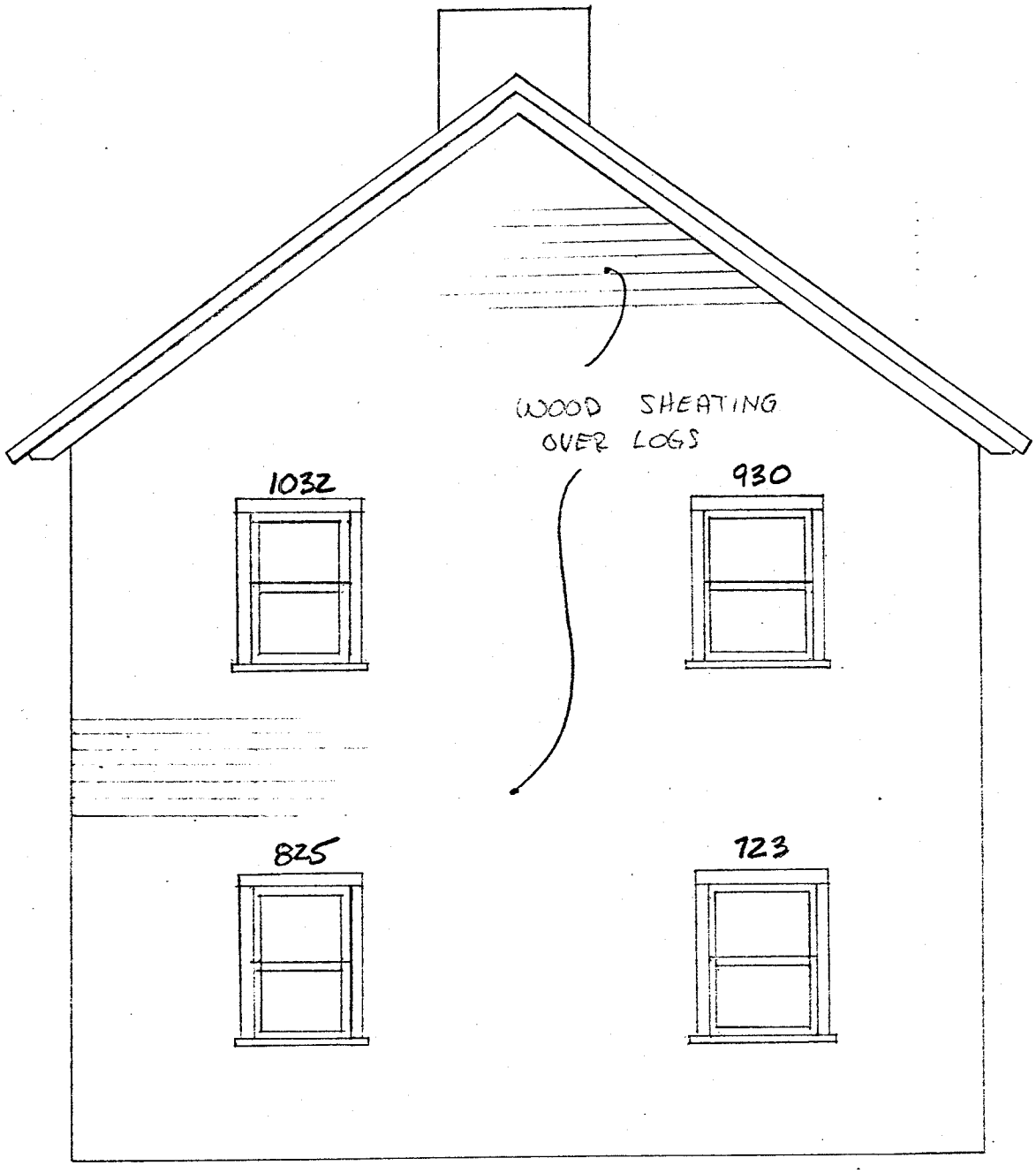
Drawn by: Paula Stoner Dickey
Preservation Assoc.
6-20-71



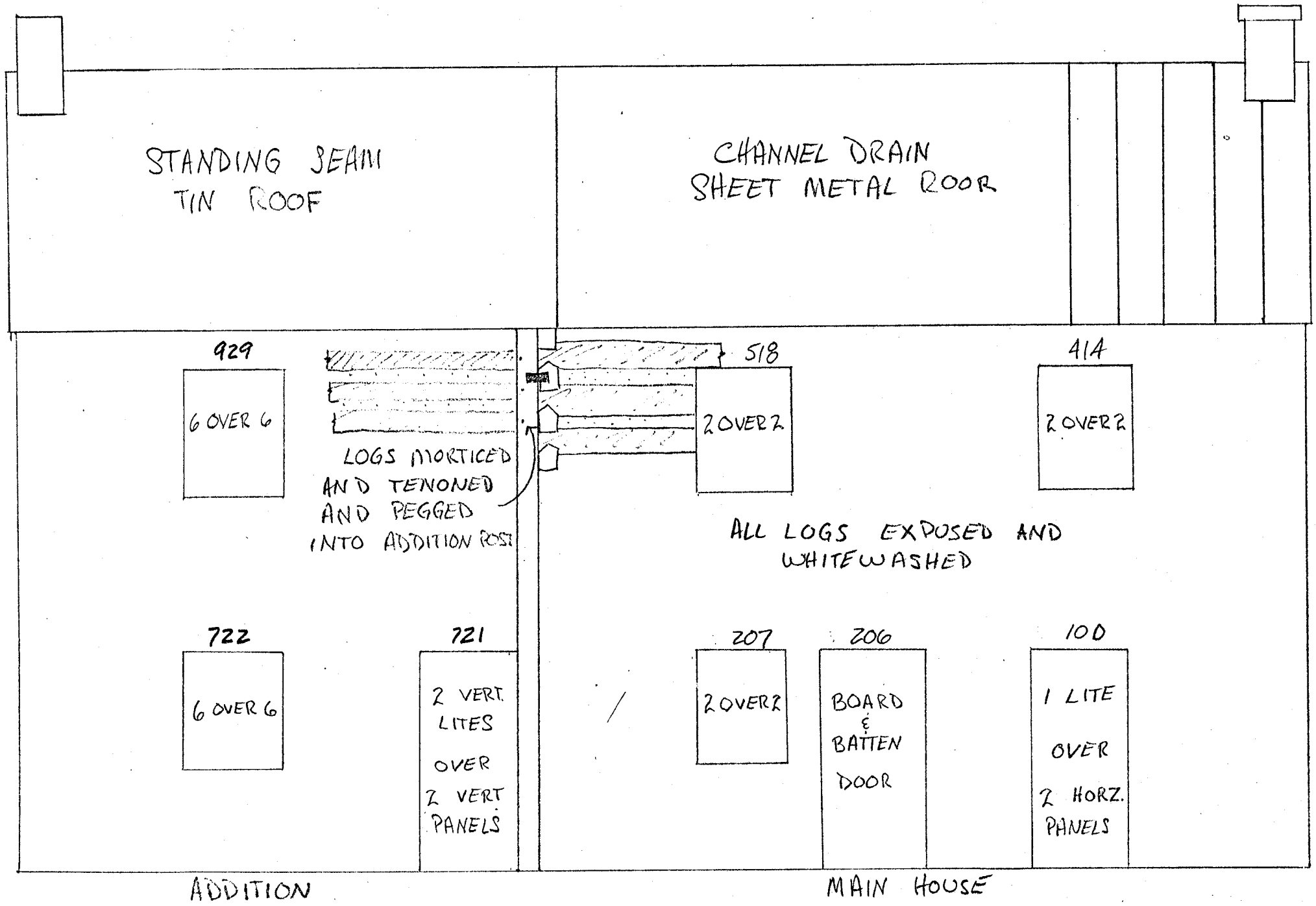
Iron Workers House
Catoctin Furnace
Frederick County Maryland

Second Floor Plan
Scale: 1/4" = 1'
N

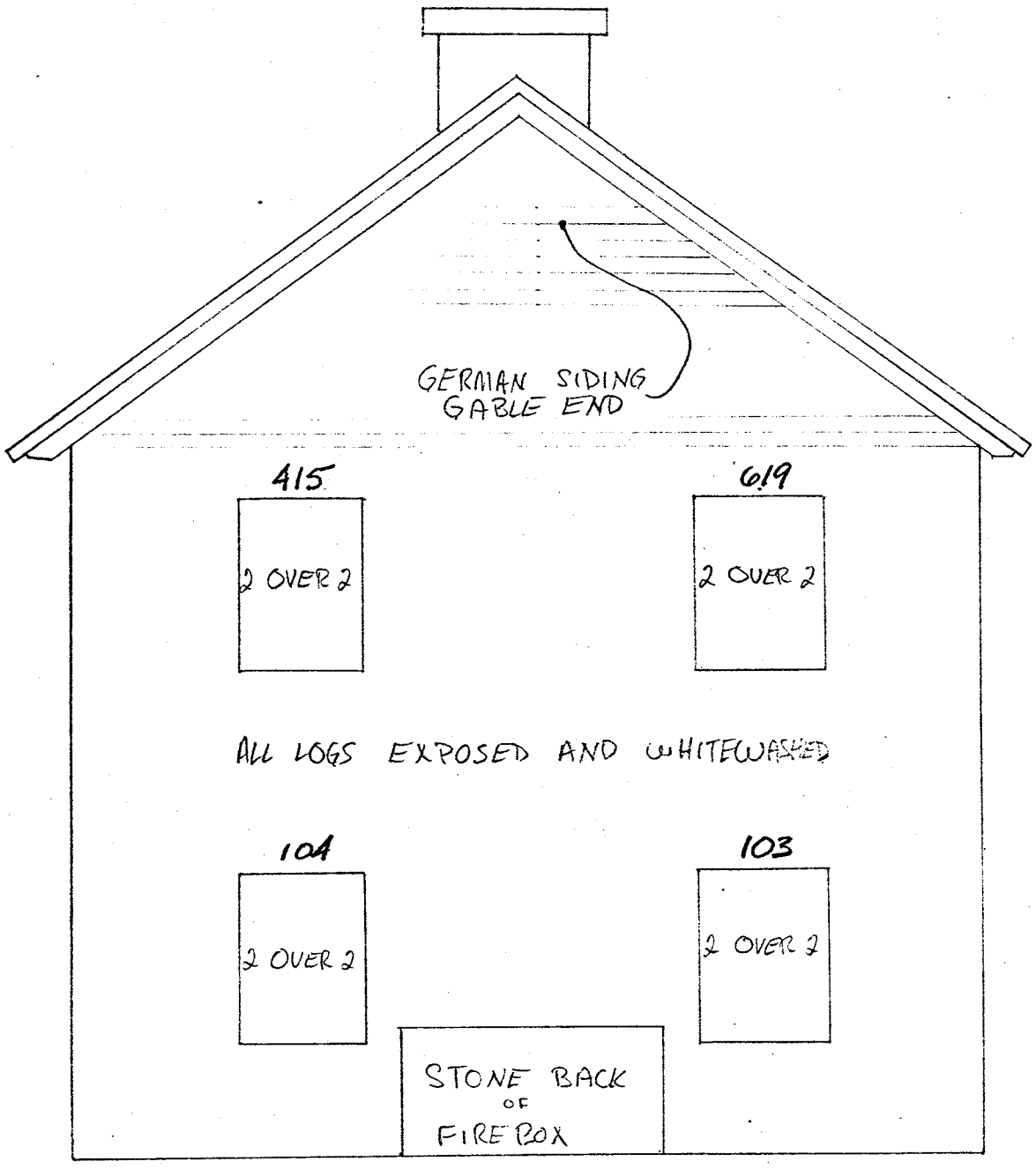
Drawn by: Paula Stoner Dickey
Preservation Assoc.
6-20-77



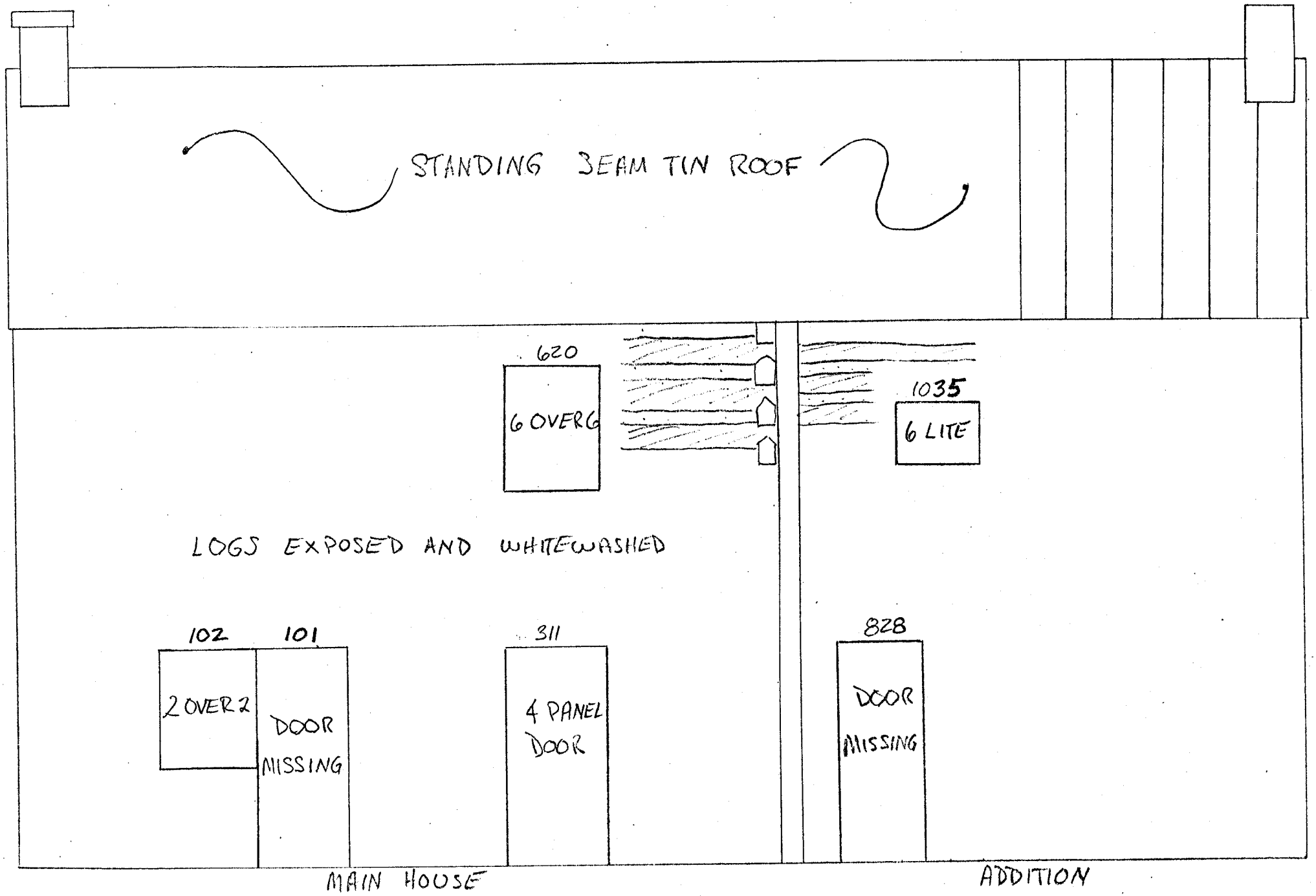
NORTH ELEVATION



WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION

DEMOLITION AND STUDY

This phase will be one of the most crucial periods of work as far as an accurate restoration is concerned. It will accomplish three things: one, the building will be thoroughly prepared for restoration; two, all debris from the demolition will be cleared away from the site; three, all possible architectural evidence will be analyzed and a clear picture of the structure hopefully will appear.

During the final stages of planning the restoration, the building will have to be stabilized to prevent further decay. It is at the end of the demolition work that the building will be protected by temporary means.

ARCHITECTURAL DISMANTLING

MAIN HOUSE

Remove:

1. Back ca. twentieth century addition.
2. Front porch.
3. Chimney top to attic floor level.
4. All loose whitewash and chinking.
5. Plaster from the entire second floor.
6. Trim and molding (tag and save) from second floor.
7. Partitions from second floor.
8. Plaster from the entire first floor.

9. All lath from the first floor.

10. Trim and molding (tag and save) from the first floor.

11. Partitions from the first floor.

12. Second floor joist system.

13. Stairs in north west corner.

14. First floor joist system.

15. Prop and brace attic floor joists.

16. Tie longitudinal girt logs together in the center of the room.

ADDITION

Remove all architectural elements in this section in the same manner as listed above.

FINAL ARCHITECTURAL ANALYSIS

As each phase of the demolition proceeds, it is imperative that a qualified architectural historian be present to guide the work. It will be the historian's responsibility to detect the structural changes and architectural evidence depicting an earlier period and to tag and store all reuseable architectural elements. It should be within the historian's power to halt the demolition work as the need arises in order to take pictures, notes, and/or tag pieces of the structure.

It is during this structural preparation prior to restoration of a building that the buried evidence comes to view. However, unless a well-trained observer is on the scene, many minute and subtle clues will be over-looked, lost, and forever destroyed. It will be the last chance to obtain a clear picture of this

building if the clues exist.

RESTORATION PLAN

The main house was built several decades prior to the addition. Since the main house was not remodeled at the time of the construction of the addition, it is not possible to portray accurately a single period throughout the entire structure. There fortunately is enough remaining architectural evidence left to suggest the appearance of the main house as well as the addition shortly after each section was built.

The following portrayal of what the structure should look like at the end of the restoration process is based on existing physical evidence. Since the demolition and the final report have yet to be done, additional evidence may be found which could result in minor changes in the report.

The first dwelling on this property is believed to have been one and one-half story structure of log with a stone chimney and firebox. There is very little evidence to date this original cabin, but it could possibly have been built during the first quarter of the nineteenth century. There is an early advertisement of the furnace for sale listing two stone houses and fifteen to twenty log houses.[1] This was in 1812 prior to which the furnace was leased by Blackburn and Thornton* from Johnson. The original section of one and one-half stories could have been

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1. Contract Archaeology Inc., An Historical and Archaeology Survey. Alexandria, Va., October, 1971.

*Blackford & Thornburgh

built in the 1803 to 1811 period.

This original dwelling was raised in height to accommodate a full second floor in the mid-nineteenth century, probably around 1850. It is this second major period of the house that will be restored to its original condition. The exterior will retain most of the existing door and window positions. The windows will be plain rail double hung sash with six over six lights. The original doors are of board and batten construction. The replacements for this side should also be of board and batten construction. The casing is plain with no moulding. The walls will be chinked and daubed as required and the entire exterior wall treatment will be whitewashed.

The foundations will be underpinned and in some cases totally rebuilt. All foundations that show above ground will be built from the original stones and pointed flush with the surface. These foundations were not dry wall; rather, all the mortar has been completely washed out. These foundation walls will also be whitewashed.

The eventual roof covering will be sawn cedar shakes that within a year after application will be silver-gray. The porch roof (which will be rebuilt) will also be of wood shingles. The shingles will not be hand-split, the rows will be straight, and the exposure will be six inches to the weather.

The chimneys on both sides will be rebuilt using the old bricks above the roof line. The chimney on the south will be larger and have a top of brick corbeling as it appears today. The north chimney will be smaller in size and will be finished

as it appears in the ca. 1930 picture published in the archeaological report.

The house will eventually have a porch rebuilt on the front. The details of the porch will be submitted after the demolition and follow-up reports are completed.

The first floor interior of the main house will be a basic German floor plan with a fireplace and kitchen area off of which are two rooms. The ca. 1850 renovation included the first plastering the house had ever had. Eventually, the entire house will be plastered.

The trim will be mitred at the corners and beaded on the edge. The baseboard will be six inches high with a one-half bead on the top front edge. The interior doors will all be board and batten constructed with clinched nails.

The hardware will be period cast-iron rim set locks for all exterior doors with cusp thumb latches for the interior doors. The hinges will all be plain, loose pin, steel butt hinges, only one pair to each door.

In the southwest corner between the wall and the fireplace will be a narrow staircase known as a tightwinder. This will climb to the attic from the first floor. There will be a door on the first floor along side a closet door to close off the storage area under the stairs. There will also be a board and batten door leading to the attic. There will not be a door at the second floor level leading to the first floor.

The floors will be pine (as well as all the woodwork throughout the house). They will be seven-eighths inch thick, tongue

and grooved and of random width from 5 inches to 6½ inches on the first floor and the second floor.

The stone base fireplace on the first floor will be whitewashed in the first phase and plastered later. A stone hearth will be set the width of the chimney base and eighteen inches out from it flush with the top of the floor. However, brick may be used.

The addition is essentially the same on the outside as the main house except that the north wall will be resided and whitewashed. Also, the front and back doors are four panel. The windows are six over six light double hung sash.

The casing on the exterior is beaded and will be done as per the existing example of window #721. The interior casing is also beaded and has a backband with a simple bevel design to outline the windows and doors. There is also a chair rail on the first floor. The baseboard is again six inches high and beaded.

Electricity will be a part of the restoration plan of the historic structure. Hidden wall outlets and, if possible, indirect lighting will be strategically placed. However, one of the main reasons for the inclusion of electricity is for the fire and smoke detectors that will be installed. It is very important, both from the standpoint of public safety as well as to protect the structure, to include these safeguards.

It is not recommended that any other modern conveniences be included. This structure should not be considered as one in which people will live. The main reason for this is that the house can not accommodate any systems without structural or visual

alterations. To install a heating plant, an entire room would be lost. A basement is out of the question because of the water table. Electric heat can not be considered as an alternate. Electric heat, aside from its exhorbitant expense, needs to be installed in a house that is sealed. To seal a log house is the worst possible treatment that it can ever get. The only reason that the house walls are in their relatively good condition is because they could readily breath and dry out quickly.

To insulate the house becomes a very large expense item. All the walls on the inside would have to be framed out to receive insulation. This will result in an overall loss of eight inches in each dimension in the rooms. Aside from this, special window and door jambs would have to be built to extend them into the room further. The entire effect is not desirable in a museum restoration.

Plumbing, especially for public convenience, may be considered, but not within the existing structure. To introduce plumbing into the house would be again as detrimental as any heating plant. Also, another room would be lost for the use of the fixtures. The main objection is that of the water inside the house. Though the pipes may not leak, condensation is water, and water means rot and eventual damage to the house. There already is a serious water problem under the house without introducing more.

However, the public and museum employees must have accommodations available and these facilities will be included in a later phase of work. The facilities will be placed in back of

the house in what will appear to be a large outhouse or perhaps as another type of out-building. Although there will be modern facilities within this new structure, the outside will be in keeping with the period of the house.

By placing these conveniences a short distance from the house, the museum will gain from several areas. First and foremost, the integrity of the historic structure will be saved. Secondly, the public will have a better idea of the type of living conditions which were a part of this house by walking the path out back.

Another important consideration in placing the facilities outside the house is the initial cost and yearly maintenance. The inclusion of systems in an old house being used for museum purposes is expensive. The measures that would need to be taken to protect the house would in all probability cost more than would be needed to build a new building. When the loss of the historic value of the house is considered, the cost is prohibitive. It is also much easier to meet construction codes by building a new facility. Such a system can be protected against winter damage by proper installation of the plumbing system. If the museum is to be used in the winter, the smaller out-building can be economically heated.

IMPLEMENTATION OF PLAN

Though this report is not complete for the purposes of the restoration of the double log house, this portion of the plan should be considered fairly stable in content. A few very minor changes may be made resulting from notes taken during the architectural demolition. Based on a thorough consideration of the evidence existing in the building at this time, the following restoration plan will provide the historical society with the broadest historical interpretation within this structure.

TOPOGRAPHY, SOIL, AND WATER

Due to the high water table existing under and around the log house and to the raised bed of Route 15 and its attendant water runoff problems during periods of precipitation, the structure has experienced serious deterioration, causing rot over the entire first floor system. Termites have also caused damage.

It has been ascertained that the sluiceway behind the house is an early attempt to improve the water runoff condition. After years of neglect the waterway has silted up at least six inches and is now adding to the water problem by not allowing free runoff.

The sluiceway is about eighteen inches wide and twelve inches deep when cleaned out to its original proportions. The sides as well as the bottom were stone lined. The course of the sluiceway has been altered on the north end of the property.

The most immediate possible solution to the water problem is reducing the level of the water table by cleaning the sluiceway. It was suggested that simply cleaning it out will help discharge some of the excess water. To make the sluiceway totally effective, however, the channel should be dug out for several hundred feet further than the southern boundary of the property line. The property owners to the south of the house should be asked if the channel can be cleaned since it will also help to drain their properties.

Both consultants felt the next step would be to regrade the Route 15 drainage ditch so that all water runs to a point just north of the existing cedar tree to a water grate. Below this would be a pipe running underground and emptying into the sluiceway. This should be feasible since there is approximately twenty-four inches of fall in ground elevation from the Route 15 drain to the sluiceway.

Around the foundation near the base of the footers will be placed a perforated drain pipe running the entire perimeter of the house. It's low point will be where it leaves the house in the southeast corner. Here the pipe will run to the edge of the property, intersect and empty into the sluiceway. This proposal should be done only under the supervision of an expert. Should the sluiceway flood due to high water, the water could run back up the pipe to the foundation.

Other suggestions are to remove as much ground cover as possible to allow the ground to dry from evaporation. Part of the restoration will include removal of the sidewalks and cement

around the house. This will be a help, but trimming the tree limbs that overhang the property and removing all the shrubs will aid the cause more.

If a right-of-way is to be granted along the southern property line, it should be a condition that the surface never be sealed to the weather. Any solid surfacing treatment will only add to the water problem as well as detract from the value of the restoration of the entire site.

The soil condition is a contributing factor in water retention. The thick loamy soil is rich with organic matter that is matted on the surface and the top several inches are laced with clay. One suggestion was to condition the ground by breaking down this thick, organic clay by adding sandy soil to it. However, this could be expensive and by itself will have little effect.

The last and most expensive measure is to drill wells around the property. These would then be tied to a master well with a pump to reduce the water table level. This will solve all the problems of water, but will be expensive to implement and maintain.

It is not recommended that this action be taken just for this site. If a large block of land eventually becomes part of the historic complex, and all this ground is wet, then this idea can be implemented.

FOUNDATIONS

All of the foundations under the portions of the structure that are to be saved need to be rebuilt and stabilized. Under two corners of the addition, the foundations have completely

failed. Most of the mortar in all the foundations has weakened.

The following recommendations for the foundations and exterior walls must be done initially and can not be broken down into phases.

MAIN HOUSE

1. Remove the seriously deteriorated sill logs from the foundations and prop the house up. Repoint all the joints and relay the tops of the foundation as necessary. Underpin all the corners and under all ground floor doors.
2. Provide adequate ventilation grates.
3. Run center cinder block support for joists.
4. Put termite caps on the foundations.

ADDITION

1. Raise addition to former level at completion of initial construction. Prop and remove the bad sill logs.
2. Remove old foundation, dig new footers, and pour solid to four inches below ground level.
3. Rebuild the foundation with the original stones to former height.
4. Provide adequate ventilation grates.
5. Put termite caps on the foundations.

EXTERIOR WALLS AND CHIMNEYS

Rather amazingly, the log walls are in salvagable condition. Until the house has been stripped of all its accumulated renovations of the late nineteenth and the twentieth centuries, the complete picture will not be available. Thus far no termite damage

has been found in the walls. There is water and rot damage which must be attended to to prevent further rapid decay.

STONE/BRICK CHIMNEY - MAIN HOUSE

1. Remove the top of the chimney down to the attic floor level.
2. Remove the plaster from the fireplace.
3. Clean all the mortar joints by hand.
4. Repoint the inside of the firebox and the chimney.
5. Rebuild the chimney to the exact size and shape as previously existed.
6. Whitewash the firebox, inside and out.

BRICK CHIMNEY - ADDITION

1. Remove the top of the chimney down to the attic floor level.
2. Remove the mantel from the fireplace for re-conditioning.
3. Chip off the loose plaster, leave the solid plaster.
4. Hand clean all the joints of loose mortar.
5. Rebuild the chimney to the exact size and shape as previously existed.
6. Repoint the joints.

MAIN HOUSE - EXTERIOR WALLS

1. Replace the sill logs as necessary.
2. Replace the wall logs as necessary.
3. Set the new second floor joist systems.
4. Rechink and daub.

ADDITION - EXTERIOR WALLS

1. Replace the sill logs as necessary.
2. Reinforce the pins on the addition posts.
3. Replace the wall logs as necessary.
4. Set the new second floor joists.
5. Chink and daub as necessary.

ROOF

The present roof is made up of sheet metal standing seam over wooden shingles except that the southwest quadrant is covered with sheet tin. The protective envelope seems intact and sound enough to be repaired and utilized until the second phase of restoration. However, this is only a remedial solution to reducing the initial cost of restoration. As soon as it can be done, the roof will be replaced with sawn cedar shakes.

PHASE I - RESTORATION OF ROOF

MAIN HOUSE

1. Patch any small holes with roof cement.
2. Paint with black roof paint.

ADDITION

1. After the addition walls have been raised and stabilized, the roof line should have straightened. If possible, more adjustments may be made in the top plate by shimming the corner notch and rafter seats.
2. Patch any small holes with roof cement.
3. Paint with black roof paint.

PHASE II - RESTORATION OF ROOF

Replace with sawn cedar shakes.

MAIN HOUSE - INTERIOR

Because of the structural instability, most of the interior of the house will be removed. Very little of the original fabric remains except for some trim which will be salvaged and reused, where possible.

PHASE I - INTERIOR RESTORATION - MAIN HOUSE

FIRST FLOOR

1. Replace the joist system with pressure treated 2" x 8" joists on sixteen inch centers. In conjunction with this another set of joists could be run on twenty-four inch centers. The floor will be tongue nailed on sixteen inch centers and surfaced nailed on twenty-four inch centers.
2. Lay one-half inch exterior grade marine glue plywood as the sub-floor.
3. Replace the exterior window and door frames, windows and doors, and trim as determined by further structural study during the demolition.
4. Install vertical board partitions in positions as determined by further structural analysis.
5. Hang the doors and trim them where needed in partitions.
6. Build the first floor tightwinder staircase according to the details found on the log walls, in southwest corner next to the fireplace.

7. Whitewash all the exterior walls on the inside as well as the fireplace from the floor to the ceiling.
8. Lay random four inch to six inch tongue and grooved seven-eighths inch thick pine flooring.

SECOND FLOOR

1. Lay random four inch to six inch tongue and grooved seven-eighths inch thick pine flooring.

PHASE II - INTERIOR RESTORATION - MAIN HOUSE

FIRST FLOOR

1. Lath all the walls and the ceilings out for plaster.
2. Do all necessary trim work prior to plastering to act as grounds.
3. Plaster.

SECOND FLOOR

1. Build the stud wall partitions.
2. Build in the door jambs.
3. Lath the walls and ceilings for plaster.
4. Do all necessary trim work prior to plastering to act as grounds.
5. Build the second floor to the attic tightwinder staircase.
6. Plaster.

PHASE III - INTERIOR RESTORATION - MAIN HOUSE

1. Paint according to recommended color scheme.
2. Furnish along lines of the period represented by the house.

LOG ADDITION

PHASE I - INTERIOR RESTORATION - ADDITION

FIRST FLOOR

1. Reframe the gable and reside with new siding - north wall.
2. Replace the joist system with pressure treated 2" x 8" joists on sixteen inch centers. In conjunction with this, another set of joists must be run on twenty-four inch centers.
3. Lay one-half inch exterior grade marine glue plywood as the sub-floor.
4. Replace the exterior window and door frames, windows and doors, and trim out as determined by further structural study during the demolition.
5. Replace the mantel piece.
6. Build a tightwinder staircase using as much of the original as possible.
7. Lath for plaster all the walls and ceilings.
8. Plaster.
9. Lay random width 4" to 6" x 7/8" tongue and grooved pine flooring.

SECOND FLOOR

1. Lay random width 4" to 6" x 7/8" tongue and grooved pine flooring.
2. Replace the window frames and windows.

PHASE II - INTERIOR RESTORATION - ADDITION

SECOND FLOOR

1. Trim out the room as determined by the study.
2. Lath out for plaster all the walls and the ceiling.
3. Plaster.

PHASE III - INTERIOR RESTORATION - ADDITION

1. Paint according to recommended color scheme.
2. Furnish along the lines of the period represented.

COST ANALYSIS

For all intents and purposes the costs for the water problem and the exterior restoration of the building can be stated as one figure. However, because the solutions to the runoff of the water are so different in nature than that of the exterior restoration they have been separated.

Listed on the figure sheet under topography, all the steps suggested as necessary to at least initially deal with the ground water problem are manageable at around $1900.00

As for the exterior of the building, this figure is considerably higher. In order to properly preserve any work done on the interior, the entire exterior shell of the building must be restored in the initial work. New logs, chinking, windows, doors, repaired roof, new foundations, etc. are all an integral part of the exterior shell. The exterior shell restoration can be accomplished for $11,673.00. This does not include windows and doors, porch, fence, nor whitewashing. This price also includes only the repair of the existing roof. The windows and doors were estimated in the individual rooms.

To help keep the initial cost of the exterior restoration down, the existing roof can be used for a while, and the present chimneys, except for urgent repairs for safety sake, can be retained.

The interior of the house can be restored altogether at a later date after the completion of the exterior restoration. Or, as money becomes available, each room can be done, though this room by room method is more expensive.

The following chart of figures can be juggled many ways in order to raise or lower the initial restoration figure. The first three columns are valuable for this purpose. The short columns after the double lines only serve to break down each room's expense items so a study can be made of where the money is going.

A point to keep in mind is that the longer the total restoration is spread out in terms of time, the more expensive it gets. The $44,460.00 figure should hold for about one year. After that the annual rate of construction cost increases is from 11% to 18% depending on the trade and its attendant materials.

The total figure is also one that reflects a workable price by a contractor with experience in log house restoration. Some bids could be considerably higher which could demonstrate several things. Either the bidding contractor lacks experience and is covering his bid to make sure he comes out ahead; or he has a highly paid crew, possibly union. A unionized crew will greatly increase the labor costs of any job.

In order to circumvent some possible cost problems as well as other mechanical problems, the historical society should award the bid only on the basis of experience in the log house field. One other basis for consideration is if there is a knowledgeable consultant at the contractor's disposal possibly retained by the contractor for this job.

COST ESTIMATE BREAKDOWN

	Phase I	Phase II	Phase III
Preliminary Report	600		
Demolition & Study	2230		
Final Report	450		
Topography	1900		
Foundations	2520		
Exterior Walls	7867		
Joist System	1046		
Roof	240	2496	
Chimneys	600	400	
Porch & Fence		1242	630
Electricity	600	900	
	18053	5038	630

Note #1 - The first eight items under Phase I must be done first.

Note #2 - The chimneys and electrical work could be put back one phase reducing Phase I costs by $1200.00.

Note #3 - Room 3, and Rooms 7&8 can be partially put back one phase reducing phase I costs by $2125.00.

				Plaster	Wood trim	Floor Walls	Openings	Stair Cases	Paint
Room 1	3149	721	120	532	189	820	1125	954	120
Room 2	2123	652	150	472	180	748	1375		150
Room 3	800	344	100	254	90	200	600		100
Room 4	264	1838	859	370	156	336	1250	729	859
Room 5	200	992	170	346	171	200	475		170
Room 6	450	1150	190	583	144	523	350		190
Rooms 7 & 8	2120	1890	170	473	357	595	1525	500	170
Rooms 9 & 10	500	700	1087	570	357	160	700		160
	9606	8287	2846	3600	1644	3582	7400	2183	1919
44,460	27659	13325	3476						

ABSTRACT

ANALYSIS OF BUILDING

The ironworker's house at Catoctin Furnace is a two story, three bay log dwelling facing west with a two story, two bay log addition to its north end. The original house appears to have been a one and a half story building whitewashed inside and out. Little evidence of this structure, which possibly dated from the early nineteenth century, remains. The building was extended to two full stories probably during the mid-nineteenth century at which time the chimney inside the south end wall was rebuilt and the interior walls were plastered. The north addition was constructed several years later.

RESTORATION

The ground around and under the log structure is wet and must be corrected. By clearing the drainage ditch in back and by running an underground pipe from Route 15 to this back sluiceway, the problem may be solved.

The foundations must be repaired to safely hold the restored structure. The corners will be underpinned. The footers should be drained using a perforated drain pipe leading to the back drainage ditch.

All the work to the exterior walls must be done to protect the interior and stabilize the structure as a whole. Since the entire exterior must be done in the beginning, this will make the initial restoration cost high. All replacement logs, chinking

and daubing, windows and doors, roof, and the whitewash must be done. The chimneys as well as a new roof can be put off until a future restoration phase.

The existing roof is salvagable and will be repaired for continued use. However, the roof will be replaced with a new wood shingle roof before plastering the inside of the house.

The interior floor systems on both floors as well as the first floor staircases must be done. The interior finish on the first floor main house will initially be whitewashed. Later, it will be trimmed and plastered along with the second floor main house. A possible third phase will finish off the house by painting and finishing other surfaces.

The first floor interior of the addition will be plastered in its initial restoration. This side could be put off until the second phase of the restoration. The use of this side will be lost until it is finished. The second floor will be restored at a later date.