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HISTORIC STRUCTURES REPORT

ARCHITECTURAL DATA, PART III

RESTORATION

OF

THE VILLAGE BARN

HOPEWELL VILLAGE NATIONAL HISTORIC SITE

Hopewell, Pa.

by

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Architect

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Eastern Office, Design and Construction

HISTORIC STRUCTURES REPORT

PART III

RESTORATION

OF

THE VILLAGE BARN

A P P R O V A L S H E E T

RECOMMENDED

_____ Date _____
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I. INTRODUCTION

A. RESTORATION PROGRAM

When the National Park Service acquired Hopewell Village in 1938 the village was virtually unchanged in character from its original appearance in the nineteenth century The greatest anachronism was the Village Barn

After the restoration of the major part of the structures around the furnace, the nucleus of the village, the first important restoration to be undertaken which would affect the character of the village was the Village Barn.

It should be explained why the term "village" is used in connection with the barn. It was the largest structure for housing animals in the village Tenant houses had small barns for the use of the occupants but it was the large barn that both the work horses and mules used in the furnace operation were housed Dairy cattle also had quarters in the mid-section of the barn

Long after the furnace operations ceased, the owners of Hopewell, Mr and Mrs. Edward Brooke continued to use the village as a dairy farm. In 1926 a large, stuccoed, gambrel roofed structure was erected over the old stone barn Fortunately for those interested in the restoration enough of the older walls were left intact to indicate the extent and design of the older barn. The newer structure, as long as the older barn, was twice its former width and considerably higher. Above and to the

south of the old stone walls, cinder block walls were erected increasing greatly the barns size and capacity

By the demolition of the 1926 portion of the dairy barn and the subsequent restoration of the early barn, the building would again take its place as part of the old village. Interpretation of the early ironmaking community would become easier with the modern barn removed from the heart of the scene. The interior of the old barn with its stables and hay mows would be a great asset to the interpretation of the village in its flourishing period. Accordingly, PCP's were prepared for the restoration and work was scheduled for the restoration to begin in the fiscal year 1959

To initiate the program of research a Historic Structures Report, Part I,was prepared stating the existing conditions and the restoration proposed This part one section was issued and approved in January 1959 The Part II Architectural Section of the report was prepared by the Architect after thorough investigation of the building and available records

B REFERENCE WORKS USED

Dornbusch and Heyl's definitive work The Pennsylvania German Barn, published in 1956 by the Pennsylvania German Folklore Society proved to be a valuable source containing many examples of the Pennsylvania Bank Barn

The work, The Pennsylvania Barn, edited by Dr Alfred Shoemaker and published by the Pennsylvania Dutch Folklore Center at Franklin and Marshall College in 1955 also contains many fine examples.

For the information relating to the background material and the Hopewell Barn in particular the typescript work "Documentation For Historic Base Maps" by former Park Historian Apple was consulted

Another source of similar Pennsylvania barns was found after the barn was completed but of interest is The Lower Jordan Valley Pennsylvania German Settlement by David G Williams, published by the Lehigh County Historical Society in 1950

C CREDITS

For both the research and planning stages credit for assistance must be given to people who assisted in various ways In addition to the authors of the various sections of the Historic Structures Reports already mentioned credits must be accorded the following:

The Supervisory Architect of the Historic Structures Section of the Eastern Office of Design and Construction, Charles E Peterson

To Charles Sheridan Painter, long time resident of Hopewell Village and local contractor who pulled down the original barn and who provided the writer with many details of the original framing and construction Mr Painter also built the 1926 structure over the walls of the old barn

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In the actual restoration project appreciation for the amiable cooperation and excellent craftsmanship of Christ Beiler and his crew of Amish barn builders

To Building Restoration Specialist Charles H Seidel, an interested and deft assistant

To W Russell Bowen, a mason of the old school who reproduced and stabilized the extensive stone portions of the barn

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Norman M Souder
Architect
December 1960

II. ARCHITECTURAL RESEARCH

A. LOCATIONS OF OLD BARNS AND DETAILS NOTED

The search of similar barn types with the cantilevered forebay began at the farms of Theadore Neiman on St. Peter's Road and Charles Messner on Route 83 near Gibralter.

For stable details the above mentioned farm at Gibralter, Mr. Singer's farm near Churchtown and Miss Nellie Bitler's barn at Pine Swamp were studied. Miss Bitler's farm also had stone door jambs as did the large serpentine stone barn north of West Chester, Pa. Comparable barred windows and drew bars also occur at the "Morleigh" in Lionville, Pa. owned by the author. The writer stopped at many farms whose owners are not known and who may not have known that the writer stopped and made a few quick notes.

All of the above farms examined for a particular detail revealed the existence of many other pertinent items that were of value in the restoration of the Village Barn. Many notable hinge designs, watering troughs, granaries and construction details were found.

The result of the side trips was a composite of the early barns of the period that was applicable to the restoration of the barn at Hopewell.

B. GENERAL CHARACTERISTICS OF PENNSYLVANIA GERMAN BARNS

Dornbusch and Hayl in their work The Pennsylvania German Barn have listed many barns according to their structural and design types. Shoemaker's "The Pennsylvania Barn" contains a series of essays on the subject but does not classify the

various barns into types

While the type and sizes varied according to the circumstances and requirements of the owners, certain characteristics remain constant

The bank barn, associated mainly with the Pennsylvania Dutch, contains the stable on the lower level and the grain storage and hay mows on the upper level The barn was usually built on the side of a hill or rise in grade in order to make the approach by wagon to the mows in the upper level more gradual Occasionally, however, the barn was erected on a comparatively level grade In this case the bank was a long built-up ramp of earth with stone retaining, or check, walls at the sides In connection with this latter type, common in Chester County, a bridge was provided connecting the ramp with the threshing floor thus eliminating the earth pressure of the long ramp on the foundation wall of the barn.

The central runway approached by this ramp was flanked by hay mows The floors of which were usually loose boards and could be filled with hay from floor to roof The runway, commonly known as the threshing floor, was solidly floored in planking strong enough to support the largest loads and hay wagons In each of the mows a hay chute was constructed for convenience of pushing the hay to the stables below These were made of poles reaching from floor to rafters and were sided with rough slats or boarding two feet apart to form a crude ladder A hole at the base of this chute on the mow floor opened into the manger aisle of the stable below

In the stable on the lower level the custom was to provide a manger aisle for feeding with the stalls on either side The number of stalls depended upon the width of the barn The width required for each animal being approximately 3'-6" to 4'-0". In the Hopewell Barn there were six stalls per aisle, three manger aisles and six ranks of stalls which provided housing for thirty-six animals. Only one section consisting of a manger aisle and two ranks of stalls has been restored at this time.

Each row of stalls and each manger aisle was provided with a door on the stable side under the projecting forebay "Dutch" type doors are the most common since the upper sections could be opened for ventilation, the closed lower section kept the animals from escaping.

An additional restrictive feature in some of the older barns was the use of oak draw bars which were set in the stable wall and could be slid across the door opening, the end resting in a shallow recess on the opposite jamb. When not in use these were kept pushed into the jamb of the door and had a wrought iron ring at the end for convenience in drawing the bar out of the wall These draw bars were used only in the doors opening from the stalls

Granaries, separate rooms fitted with bins for grain feeds, were usually located in the forebay on the mow level Occasionally they were located over the feeding areas with a chute from the granary to a mixing trough in the

stable below. In the Hopewell barn these have been placed in the traditional location for two reasons. First there is no known location of the granaries in the original structure. Second, due to the upper level being open to visitors, the size of the granaries had to be minimized and located in the corners to allow visitor circulation.

The structural framing of the various barn types of the early period (late eighteenth century -- mid-nineteenth century) appears to have been similar in this area. The drawing of a typical cross section is included in the appendix. Such variations are minor and appear to have been the result of the owners desires and the size of the structure, that is, an increase in the width and height which changes the structural proportions.

C USE OF HOPEWELL PHOTOGRAPHS

Several photographs, now in the Hopewell files, provided a valuable aid in designing missing features. Such details as the roof pitch, shutters, the circular opening in the west gable, and early grade lines were taken from these old photos. Unfortunately no photographs were found depicting the north and south elevations of the original barn. The Stauffer 1920 photo of the south shows the old barn at its peak of development when the forebay had been greatly enlarged and supported on pillars.

Another photo, P-1958-54, shows the third stage, a carriage shed at the east end as a lean to stone addition which

was later raised to full height with vertical wood siding. These sections added after the 1840 period were not included in the restoration.

The series of photos showing the west end of the barn indicate many changes in grade levels. However, there are none showing the west stable door in use as it has been restored. As a result the present restored grade on the west side is lower than any indicated in the photos.

D. ACCOUNTS OF DETAILS OF THE OLD CONSTRUCTION BY C. SHERIDAN PAINTER

Mr. Painter, as has been noted before, was a long time resident of the village and was also a building contractor. Having an unusual interest in buildings he retained a memory of the structure at Hopewell as they existed when he was a youth. Later he repaired many of the buildings and in 1926 pulled down the old barns and erected the modern dairy barn for Mrs. Edward Brooke, the owner of Hopewell.

Mr. Painter's knowledge of the old barn was so detailed that he was able to recall and describe such missing features as the location of the stable windows, the stable layout, and the location of the "raising piece" (sill plate) which marked the extent of the old forebay.

Painter recalls the east end wall of the first section which was completely removed in 1926 as having the same size opening as the west end. However, when the east section was added to the stone gable was removed to the square and the

stonework above the head of the opening removed to provide a higher opening by which hay could be pitched into the center mow from the new threshing floor. When the east wall was restored the stone was omitted in these areas to fit the description furnished the Architect.

The two north mow doors were different colors for a practical reason. The earlier west section was entirely whitewashed. When the next section (which we have restored) was added, the door in that section was painted red. As it is difficult to paint over whitewash it became the practice to whitewash the west mow door and paint the mow door in the east addition. Due to the narrower east door the diagonal brace caused the access door to have an angled head. Mr. Painter clearly remembers this detail. As it worked out it was necessary to slope the head of the small door in order to fit the access door into the large door.

With Mr. Painter's assistance the Architect was able to reconstruct the barn framing and establish lumber sizes to reproduce the original with great accuracy.

There is included in the appendix of this report sketches of details based on Mr. Painter's sketches and descriptions.

It should be noted here that every detail of the proposed restoration was checked for authenticity before it was incorporated into the working drawings. When the restoration was completed Mr. Painter was asked to inspect the barn. He appeared very pleased and satisfied that the structure was like the one he remembered so vividly.

E. EXPLORATION OF BUILDING FABRIC PRIOR TO REMOVAL OF MODERN PARTS

The old stone walls partially intact in the cinder block envelope of the later structure provided the first clue to the character and style of the earlier structure. The north wall at the lower level was completely intact as were the end walls except for holes cut for the modern windows and door. The stable wall (south) was only partially in place. A long section of this wall at the west end had been ripped out and a doorway in the mid section had been enlarged. The missing doorways in the south wall were determined in most cases by the sill stones, all but one of which were intact. The left jamb of the latter together with the average door width provided the clue to this last.

The remains of the missing east wall of the first building were found under the earth floor and were also indicated by the roughened areas of the north and south walls.

The upper supports of the stall and manger sections could be traced by the 6 x 6 holes in the masonry.

Such features as the west door and the changed window openings on the same wall were obvious because of the outlines of the openings found on the older construction. This condition applied to the two windows on the north wall adjacent to the former openings.

The openings on the stone east and west walls of the upper level were filled in and altered by the insertion of double windows. However, enough remained of both to determine the original size. The lintels were also partially intact so that they could be reproduced with accuracy.

The search for original wood in the building was almost futile. The visible doors and windows proved to be replacements. All of the old frames except the three in the west end of the north wall, which were covered with stone fill, were missing. All of the other frames had been removed prior to, or at the time of the 1926 conversion.

III. REMOVAL OF THE MODERN PORTIONS OF THE BARN

A. DESCRIPTION OF THE DAIRY BARN PRIOR TO DEMOLITION

The dairy barn was the same length but approximately twice the width of the first two stages of the barn. A high gambrel roofed structure covered with pebbledash stucco and roofed with asbestos shingles was designed in accordance with Jamesway dairy barn specifications. The original barnyard was enclosed by the increased width of the new structure and walled with glass at the lower level.

The stone wall between the two north mow doors and the former east wall at right angles to this wall were removed to provide a 32 foot entrance bay to the left section of the dairy barn.

The roof was supported by built-up wood trusses. The mow floor had been adapted by the National Park Service for the display of the Brooke Carriage collection by the removal of most of the mow walls retaining, however, the tall enclosed hay chutes.

The old stable wall was retained and formed an interior dividing wall longitudinally through the stable area.

The floor to the south of the old stable wall was covered with thick concrete. The earth floor to the north of the stable wall remained but was dug to a depth varying from six to eighteen inches below the level of the stone sills which marked the old floor line.

Two rows of concrete filled pipe columns provided

intermediate joist support longitudinally at mid-points between the old north and south walls and the old south wall and the later south wall

B PROCEDURE OF REMOVAL

The dismantling of the dairy barn was begun in June 1959 with the removal of the asbestos shingle roofing. The roof sheathing was stripped next followed by the removal of the rafters. The truss members were cut and lowered by ropes. Extreme care was taken during the process to avoid damage to the old walls and to avoid destroying evidence which might lead to more authentic restoration.

A crew of laborers was hired in addition to the Park maintenance crew to do the demolition.

At about the time the removal of the roof rafters and trusses the cinder block end walls were removed to the square to protect the stone walls beneath. After the truss removal was complete the block walls were removed and the rear half of the flooring ripped up. A crane and ball was employed to break up the concrete foundation walls and slab floor in the south half of the stable level.

Soon after the demolition was started the stone mason was set to stabilizing the old stone walls which were in need of repair. This was done also in order that the missing parts of the stable wall could be in place to bear the heavy log joists which were to be set as soon as the old joist were removed.

It should be noted here that much credit must go

to Superintendent Joseph R. Prentice in the supervision of the demolition crew. Skillful handling of materials and crew prevented accidents especially in the hazardous removal of the steep roof structure.

C. DISCOVERIES MADE DURING AND AFTER REMOVAL

1 Stone Door Jambs

It was obvious that the 2 1/2" plank door jambs in the remaining double doorways of the south wall were replacements and therefore, we assumed that the first jambs were also wood. When the first jambs were removed layers of whitewash were revealed under the jambs. Further investigation revealed that iron pintle anchors and hasp ring anchors were still in place in the stone walls. This meant that the doors fitted into the stone openings and that the fixed hasps on the doors acted as stops.

This discovery led to a search of similar openings in other barns. Three barns with stone jambs were found. Generally they were found on early barns. It is possible that stone jambs did not keep out the elements as well as wood jambs and were not widely used. Installation of doors was more difficult in that the door had to be scribed to fit the sometimes irregular stone opening.

2 Gable Windows in lieu of Louvers

When the stucco was removed from the old stone end walls the arched opening on the east end, and the rectangular opening on the west end were found to have pintle remnants intact in the masonry indicating the use of doors on these openings.

Until this time it was supposed that the louvers shown in the old photographs (Care 1915 & Stauffer 1920) were replacements of the original louvers. It now appeared that the end mow openings were doors similar in construction to the stone jamb stable doors.

When the restoration was done, board and batten doors were constructed and the broken pintles replaced.

The same type of wrought iron strap hinge was used on these doors as on the stable doors As a convenient means of fastening, from the interior two wrought iron hooks were stapled to the door. One, a long hook fixes the door in an open position for ventilation and light, and the other, a shorter hook to close the door securely. The hook arrangement, not an original feature, was introduced to provide additional light and air to the exhibit areas of the mows

3. Window Opening Frames

The stable openings, while they did not contain glazed sash, served as windows to admit light and air In the winter they were blocked with hay to keep out the cold.

These openings were fitted with oak frames and horizontal oak or hickory bars, and were usually placed on five inch centers. No wood sill was used The oak jambs ended on the stone opening which served as stool and sill The head and jamb were mortised, tenoned and pegged together and had the usual "ears" by which they were anchored in the stone wall. A detail of these windows is included in this report.

The three openings in the north wall of the mow level were treated in the same way. The frame in the west end of the north wall of the mow level has the only original frames remaining in the structure. The bars were missing but were replaced in the location of the former bars. Directly below it in the stable level the old frames were found intact embedded in the stone fill. These were set on the interior face of the wall in contrast to all of the others set in the exterior face. The latter two frames were badly decayed and as a result were measured and duplicated and set in the old position.

4. Draw Bar Fragments

When the wood jambs were removed from door #6 which had been increased in size in the late period wood sleeve was found containing an oak slide, or draw bar, which had been cut off due to the doorway having been enlarged. Further investigation revealed spaces or evidences of such bars at each of the remaining stall doors. None were found at the manger aisle doors.

There are many such slides in existence in the barns in the Berks and Chester County areas, such as Miss Nellie Bitler's barn in Pine Swamp, at the serpentine stone barn on the Taylor property on north High Street in West Chester, at "Norleigh" in Lionville, and the small stable at the Messner farm at Gibralter.

5. Remains of Pintles and Eye Fragments in Walls

The wrought iron pintles and hasp eye anchors in the stone walls were found in place. In most cases the shank and pintle were broken off flush with the face of the wall. Whether they were broken deliberately as a safety measure when the wood jambs were installed or were gradually broken in the passage of years and as the result of hard usage is not known. In each case a wrought copy was placed in the location of the old anchor. This accounts for the staggered appearance of the hinges on the stable doors. Due to the joints in the rubble stonework occurring in different places the pintle placing depended on the available stone joints.

IV. RESTORATION

A. SEARCH FOR SKILLED LABOR AND AUTHENTIC BUILDING MATERIALS

The contractor who had done most of the restoration work at Hopewell, C. S. Painter, was reluctant to take over the work on the barn due to failing health and a sharp decrease in his carpenter staff. This caused a brief setback in getting the restoration project under way since he was the only local carpenter familiar with the hewn timber construction used at Hopewell, since the methods of barn construction have changed from the old mortise and tenon method with which modern contractors are not familiar.

A crew of Lancaster County Amish barn builders was finally located and added to the Hopewell force. Work was begun under the direction of the Architect with Christ Beiler, the Amish contractor, as foreman for his crew on October 5th, 1959.

Two Hopewell carpenters assisted the Amish. Warren Glass remained until the end of the year with Charles Seidel remaining to carry the project to completion.

The choice of the Amish crew proved to have been a wise one. Their teamwork, and skill in the use of tools and the handling of the huge framing sections was outstanding. Their garb added much to the old world atmosphere during their employment at Hopewell.

The erection of the framing, rafters, and shingling which was the portion they agreed to do was completed on November 27th, 1959.

The green oak logs and cut timbers were obtained locally. The logs for the floor joists had to be 33 feet long. The Hilltop Lumber Co. of Elverson was the low bidder for most of the oak as well as the pole rafters of poplar. The Happel Lumber Co. of Birdsboro furnished the Pennsylvania pine for the sheathing and the interior work.

The specifications for the pine called for well seasoned lumber. The pine planking for the finished flooring was delivered green and very wet and was returned for drying. It was placed in heated storage for some weeks until the surface seemed dry to the touch. It was then laid and treated with oil and penta to prevent too rapid drying.

The search for a blacksmith to reproduce the wrought iron hardware began early. The first blacksmith secured proved too busy with other work to produce much for Hopewell and finally went out of business before completing the order. Further search in the Amish country turned up George Brubaker of Leola, a veteran blacksmith who was not only an excellent craftsman but turned out a great quantity of the hand forged hinges and pintles in a short time.

B. ERECTION

1. Work of the Stone Mason

Due to wearing away of many sections of the old lime mortar in the stonework, the mason had an extensive job of

cutting out spalled sections and reinforcing the old walls. In several areas the stones were loose and in many places were missing entirely. The lower exterior area of the west wall and the upper exterior of the east were in the poorest condition. As has been noted before, the end wall of the first section of the barn had to be fully rebuilt from the foundation together with the mid-section of the north wall on the upper level. The great gaps in each of the east and west walls where the large double windows were removed had to be filled in and the original openings restored. This latter involved the restoration of half of the stone arch in the east wall. The west section of the south stable wall was missing and had to be replaced. It was found that the stone pier between doors 3 and 4 was in poor condition. In this case the stones were numbered and removed and the pier rebuilt with the stones in the same position.

The two windows on the lower level, west wall were increased to their original size by the removal of the modern concrete brick. Brick and stone were also removed from the two windows on the west end of the north wall at the same time.

The modern window and door openings in the wash rooms at the east end of the barn were removed and the area filled in with matching stone. It was found that there were no openings in this area of the east and north walls due to the original sloping grade being higher on the east wall. These openings had been cut into the old walls when the wash rooms were

installed by the Park Service in 1936. The women's room has been closed with the fixtures in place but the men's room has been adapted for employees use utilizing the easternmost door and window of the south stable wall.

A great amount of old stone of the same rubble sandstone was needed to restore the walls. The State Park had previously donated a barn ruins from their site which Superintendent Prentice arranged to have pulled down and delivered to Hopewell. The results of the blending of the old and new stonework is excellent. It is difficult to determine the replaced stonework from the original.

2. The Hewing and Setting of Log Joists

The huge oak logs for joists were flattened on two sides before delivery. A crew of laborers were set to work with adzes and axes hewing them to the proper size prior to setting them in place. The longitudinal beam as well as the posts were hewn to 10" x 10". These timbers and all of the wood used in the barn were given a treatment of Pentachlorophenol in a kerosene carrier. The timbers resting in the stonework on near ground level were creosoted as well.

3. Cutting and Preparation of Structural Timbers

The oak structural members ranging in size from 4" x 4" to 7" x 9" were carefully laid out for their respective locations. The mortises, tenons and peg holes were marked and cut. The surfaces of these pieces were hand planed to remove the circular

saw marks. The old method of using an adz to cut the tenons was employed here. The use of wood templates in laying out the mortises and tenons facilitated the cutting and fitting. Christ Beiler who laid out the work marked each piece so that each section might be set in place easily and fit perfectly.

4. Erection of Bays

The wall plates were set in place after being fitted and notched (or "coffined") for the roof rafters. After each section of framing was assembled on the floor, the assembled unit was raised into position by ropes and manpower. When the section was level, in position and firmly seated in the sill plate mortises, the ties were pegged to the wall plates.

5. Erection of Roof Structure

After the framing section (or "bents" as they are called locally) was placed the purlin supports and braces were set in place. The purlins were next and had been notched and carefully measured to fit each bay. These were pulled into place by a hand operated portable crane.

When the purlins had been placed the poplar stripped pole rafters which had been previously mortised and tenoned at the ridge end, and notched and undercut at the eave end, were raised into place.

6. Shingling

Following the erection of the pole rafters 1" x 3" oak shingling lath were applied to the rafters on 9" centers. Prior to these the 1" x 12" eave boards were applied. Modern 24"

cedar shingles, the nearest approximation to the old hand shaved shingles were nailed to the lath. Other than the spikes used to anchor the rafters into the plate the shingling nails were the only nails used in the construction thus far.

7. Fabrication of Doors, Application of Hardware

All of the doors for the project have been constructed of one inch Pennsylvania pine boards in widths of from 8" to 12". The battens and braces are 1-1/4" pine. Cut, clinch nails were used to assemble the doors since they most nearly approximate the old nails of the period. The wide pine t. & g. boards used for the doors were edge beaded with an old moulding plane. This was the exterior treatment for the board and batten doors of the early period.

Each of the doors had to be constructed individually for its opening. Of the ten doors in the stable no two are alike either in dimension or in the separation of the upper and lower sections, the latter due to the irregular placement of the hinge pintles in the stone wall. The battens were located in order that the center of the wrought iron strap hinge would fall on the center line of the batten.

In applying the hardware the door was carefully fitted into the opening. Holes drilled into the door to correspond with the rivet holes in the strap hinges. Three eighth rivets (actually machine bolts cut to size) were inserted and tapped

solidly into place. The wrought iron fixed hasps were applied in the same manner.

The wrought iron strap hinges on the easternmost doors of the south stable wall and the east mow door hinges in the north wall are the donation of Mr. and Mrs. Egar Dimmock of Pottstown. The remainder are reproductions forged by the Lancaster county blacksmiths.

The curved gudgeon hinges on the access doors of the large mow doors are copies of one of the hinges in the Dimmock collection. This particular hinge was not authenticated as having been the type used on the door but as no evidence exists as to the original type it was used since it is appropriate.

C. Granary Layout and Construction

The only indication of the former granary locations came from Mr. Painter who said the granaries in the barn during his time at Hopewell were near the center of the mows and were entered from the threshing floor. This was in the period when the barn had the multiple additions and the forebay was no longer in existence.

It was decided to place the reconstructed granaries in the traditional location in the forebay thus providing circulation space in the mows for exhibits. For the same reason the granaries were reduced in length. Had the circulation space not been a factor the granaries would have been as long as the width of the mows.

Vertical pine siding on oak framing encloses the granaries on the interior. The exterior walls are the corners of the forebay. The doors are hung on wrought strap hinges and are fastened with wood slide bolts.

Two grain bins with slide fronts and slanted drop lids were built inside the west granary to demonstrate the use of the granary to the public. The old strap hinges used on the grain bin lids are old wrought hinges found at Hopewell. The east granary is identical in appearance except that the interior has not been fitted with grain bins.

9. Forebay Construction

There was no sign of the forebay either in the remains of the old barn or in the photographs. In the period of the early 1900's when the older multiple unit structure was still standing the "raising piece" (or sill plate) of the south forebay wall as recalled by Mr. Painter was in place. This was, as he remembered, approximately 4'-6" or 5'-0" beyond the face of the stone stable wall. In checking the remaining barns of this type, it was found that the 4'-6" dimension was both average and proportionally good.

The heavy log joists extended beyond the stable wall and supported the wall of the forebay. The sill and wall plates lined up with the edge of the log joists. The roof rafters continued the roof line of the barn over the forebay. The

sides were sheathed in random widths of Pennsylvania pine siding. The siding in the old barns was loosely butted in order that air might circulate into the mows for hay curing. The same installation was used in the restoration. It is figured that the boards will be nearly one quarter of an inch apart when they have been completely dried by the exposure to sun and air.

As was the custom, doors were placed in the south forebay wall opposite the mow doors to admit light and air while filling the mows and threshing grain. These doors were also used to drop straw and hay to the barnyard below. In the restoration they serve the purpose of admitting daylight to the exhibits.

10. Window and Door Lintels

In most cases lintels or portions of lintels remained so that each could be reproduced. Thicknesses varied with the openings. Oak, the same size as the original was used for the replacements. To preserve the new wood from powder post beetles it was treated with pentas and creosoted before being set in the wall. The lintels in the mow level openings remaining in the north wall are original.

An interesting but usual feature of stone barns is continuous exterior lintel for the doors and windows on the stable wall. The two inner lintels for each opening were individual for the opening, with only the exterior lintel for the doors and windows on the stable wall. The two inner lintels

for each opening were individual for the opening, with only the exterior lintel continuing across the wall. Approximately two thirds of the old continuous lintel remained and was in poor condition. Six by six oak was used for the two wall faces of each lintel and a six by eight for the interior member.

The two windows in the lower level, west elevation, had concealed lintels similar to house construction. The frame carried the few inches of stone on the exterior face of the frame and the interior exposed lintels carried the major portion of the load.

In the case of the large mow doors on the north wall the lintel was tenoned into the jamb posts. In this instance the lintel carries no weight, the roof rafters being supported on the plate just above the lintel.

11. Wood Barred Window Openings

As has been noted in Section III-3, the reproduced openings duplicate the originals. Only the frame in the west end of the north wall of the mow level is the original. New bars were made for it and inserted into the old holes. The other frames are of similar design and construction with minor adjustments of dimension as the stone openings dictated. The bars are squared and set with the faces at a forty five degree angle to the head of the frame. The bars on most of the barns and farm buildings in the vicinity are machine cut. Bars on earlier buildings were hewn and it is this type that were used at Hopewell.

A detail of the openings is included in the appendix of this report.

12. Stall and Manger Design and Layout

When it was decided to restore one section of the stable area as a means of interpreting the functions of the barn many old barns were visited to ascertain the type of stall used. Very few of the old stall types remained. Most of the barns had stalls of the later and more modern periods with the fixed post and board divisions.

Mr. Painter was again our authority and stated that no fixed post divisions had existed in the barn. The stalls were separated merely by poles resting on the manger wall and on the ground at the rear.

Two early manger arrangements which were almost duplicates were found, one in Gibralter, Berks County in the barn owned by Chas. Messner, and the other in the Lancaster County barn near Churchtown on the farm of Mr. Singer. Measurements were made of the two and adapted for use at Hopewell. Investigation showed that early stall dividers were poles which could be moved for cleaning the stall and which were either chained or tied with rope to the frame of the manger wall. The slightly movable poles were also a protection to the animals.

At present the pole stall dividers are fastened to the manger uprights by a chain bolted through the pole and stapled to the upright. There has been found no traditional method of attaching the pole to the uprights. The method

varied even in the same barn. Until more research is done on this, the present chained poles will remain.

The width of the Hopewell barn provided six stalls per row. At each stall division an upright was tenoned into the manger plater above and into the log sill plate at the floor line. The feeding trough was placed with the top edge 48" from the floor, the area between the top of the trough and the floor was sheathed in wide pine boards on the aisle side. The hay racks constructed above the trough had wood bars set in oak frames and placed on the animal's side of the manger wall sloping from the manger frame upwards to the first joist over the animal's head.

A detail of the stalls and mangers is included in the Appendix.

13. Ramps

The stone cheek wall for the west end of the ramp at the north of the barn was uncovered after the semicircular light well (circa 1920) was removed during the demolition of the dairy barn. This was largely intact with the top row of stones missing. The wall angled slightly to the west from the right angle of the barn wall.

The east cheek wall of the ramp which was erected in 1956 at the east end of the east mow door has been retained. All traces of the former cheek wall were obliterated by the

retaining wall and light well which paralleled the barn wall at the east end. This light well erected about 1926 by Nathan Care, farm manager, was removed at the time the modern barn was taken down.

14. Pointing of stonework

Many sections of the oldest pointing as well as later patching were found on the exterior walls after the removal of the pebble-dash stucco. The early pointing was brought to a flattened point and is similar to that used in many of the early stone buildings in eastern Pennsylvania.

The mason duplicated this pointing in the repaired and replaced sections of the walls as well as in the areas which the original pointing had spalled off.

15. Painting and whitewashing

Early photographs showed the exterior to have been whitewashed. When the stucco was removed many layers of whitewash were found covering the old stone walls. When the pointing was completed a coat of whitewash made from lump lime, slaked, and to which salt had been added, was applied to the walls.

According to Mr. Painter's description all of the woodwork on the first stage barn was whitewashed with the stone walls. When the second stage was erected to the east the exterior woodwork was painted with iron oxide paint or what is known as "barn red". From the earliest time the

stable doors were kept whitewashed and were done at the time of the whitewashing of the interior of the stables and the exterior of the stable wall. The interior was kept whitewashed for sanitary reasons and for making the normally dark stables lighter.

In the restoration of 1960 all the above areas were whitewashed. The exterior woodwork was painted red in the east section and whitewashed in the west section. The two board and batten shutters on the lower level, west elevation, appear in the photograph to have been dark. For this reason and due also to the fact that they appear to have been later additions they were painted red. In carrying out the tradition the facias on the east and west gables were painted red.

As there had been no indication of the original forebay, there was also no knowledge of what finish was given the sheathing on it. As most of the forebays found in the vicinity were painted red in the Pennsylvania Dutch tradition, and since it was known that red paint had been used on the barn, the forebay sheathing was then given a coat of red contrasting with the long white stable wall beneath it.

16. Grading

The grade at the north side of the barn and the south side of the Ironmaster's House was leveled by Nathan Care while he was resident farmer. As a result the grades at the east end, and between the barn and office on the west, had also been changed. From various interviews in the Hopewell files the

grade into the west hay mow from the road between the store and barn had been such as to upset hay wagons approaching the ramp.

In the process of providing a trench for the laying of electrical conduit between the Ironmaster's House and the barn, and another line between the House and the Office-Store, an early road bed was uncovered. Further investigation by Archeologist Cotter while the backhoe was on the job revealed an old brick road bed curving around the shed and running between the office-store shed and barn. This brick road bed appears not to have been the actual road surface but a ballast for a slag road from 4 to 8 inches thick. It was at this level to which the old road was restored.

This provides the basis for the restoration since the old exterior plaster line of the shed revealed an earlier grade from 18" to 36" below the present grade. The old grade lines at the south end of the house were obvious by the patching of the stucco from the former grade to the lowered present grade. This change, too, was documentated by the photos of the area taken before Mr. Care's regrading.

With this evidence as a basis the restoration of the grades was begun with the re-establishing of the road grade between the store and barn and the cutting of the grade directly north of the barn. The stone retaining walls were removed from the south of the sycamores at the south side of the house and fill placed to meet the levels indicated by the

areaway retaining wall, and the indication on the stucco of the Ironmaster's house walls. A swale was created between the house and barn. The stone wall to the east of the area and at right angle to the north barn wall was removed but the footings retained below grade when it was found that it was the retaining wall adjacent to the former carriage shed (mid 19th century) which was not restored.

Explorations of the east and west side of this wall by Archeologist Cotter revealed the original slope which has been restored. The mortar of the upper portion of the wall was later than that on the foundation indicating that the wall was rebuilt in a later period. This is confirmed by an interview in the Hopewell files by tenant farmer Care who built the wall in 1922 "on the foundations of an older wall which has fallen into poor repair."

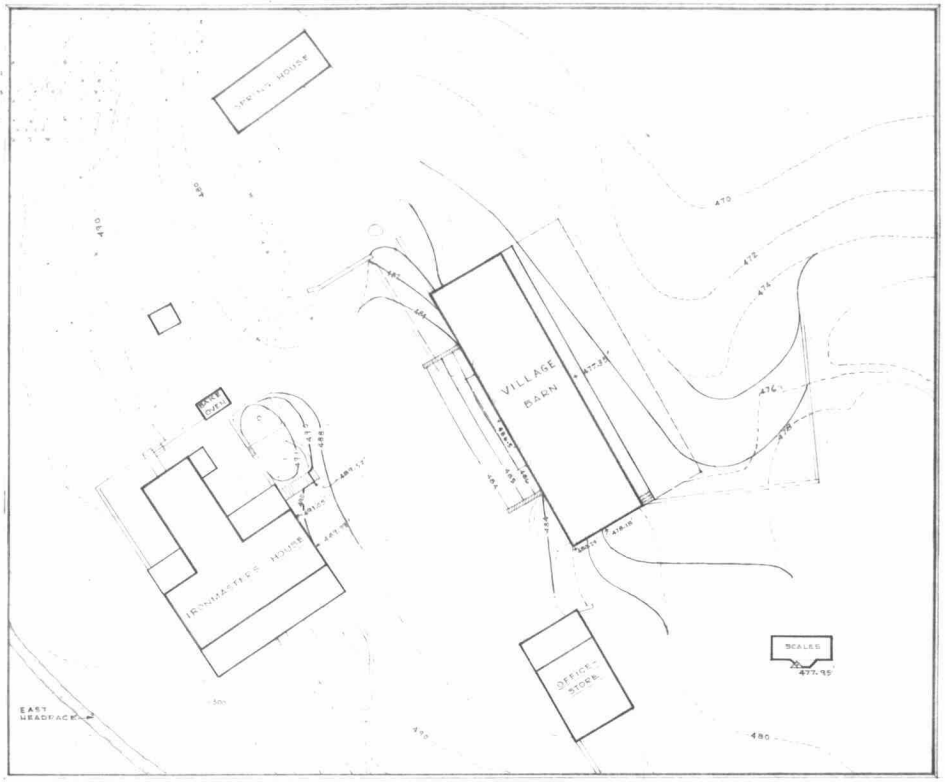
The grade at the east side of the barn had been indicated by the projecting foundation stones of the east wall. The grade at this side was then sloped from the north wall downward to the south stable wall.

On the west side of the barn the grade at the building was restored to its original level by the reopening of the west door to the stables. Hopewell interviews and Mr. Painter recall a broad stone step at the northwest corner where the grade begins the rise to the north. This too was restored.

With the completion of the regrading the barn appears to be set on the side of the hill which rises gradually from the south of the barn to well beyond the area of the village. The north barn ramp now serves a practical purpose as it did when the barn was built.

The regrading around the barn brought the restoration project to a close at the end of May, 1960.

V. APPENDIX



SITE AND GRADING PLAN

SCALE — 1" = 20'

LEGEND

EXISTING GRADES

FINISHED GRADES

EXISTING PORTION OF BUILDING TO BE REMOVED

VILLAGE BARN RESTORATION

HOPEWELL VILLAGE NATIONAL HISTORIC SITE

ON MICROFILM

WORKING DRAWINGS

THESE WORKING DRAWINGS ARE BASED ON MEASURED DRAWINGS, THE VILLAGE BARN-OLDER MASONRY AS EXISTING, NHS-HV 3053, DATED 14 AUG 1956. THE HOPEWELL HISTORIANS' FILE OF INTERVIEWS AND EXPLORATIONS BY ARCHEOLOGIST JOHN COTTER AND THE ARCHITECT ALSO REVEALED MUCH THAT HAS BEEN INCORPORATED IN THE DRAWINGS. THESE PLANS HAVE BEEN CHECKED FOR AUTHENTICITY BY C.S. PAINTER, A LOCAL CONTRACTOR, WHOSE KNOWLEDGE OF THE ORIGINAL BARN IS EXTENSIVE.

BASIC DATA

RECOMMENDED

ACTING CHIEF, EODC — John S. Gibert — 9/6/39

SUPERINTENDENT — JOSEPH R. PRENTICE — 9/6/39

REGIONAL DIRECTOR, REGION 5 — /S/ GEORGE A. PALMER, ACTING DIRECTOR — 9-20-39

CHIEF, DIVISION OF DESIGN & CONSTR. — 9-19-39

APPROVED — HILLORY A. TOLSON, ACTING DIRECTOR — 10-1-39

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
PREPARED BY EASTERN OFFICE

SITE PLAN
TITLE OF DRAWING
VILLAGE BARN RESTORATION
LOCATION WITHIN AREA
HOPEWELL VILLAGE NATIONAL HISTORIC SITE
NAME OF AREA

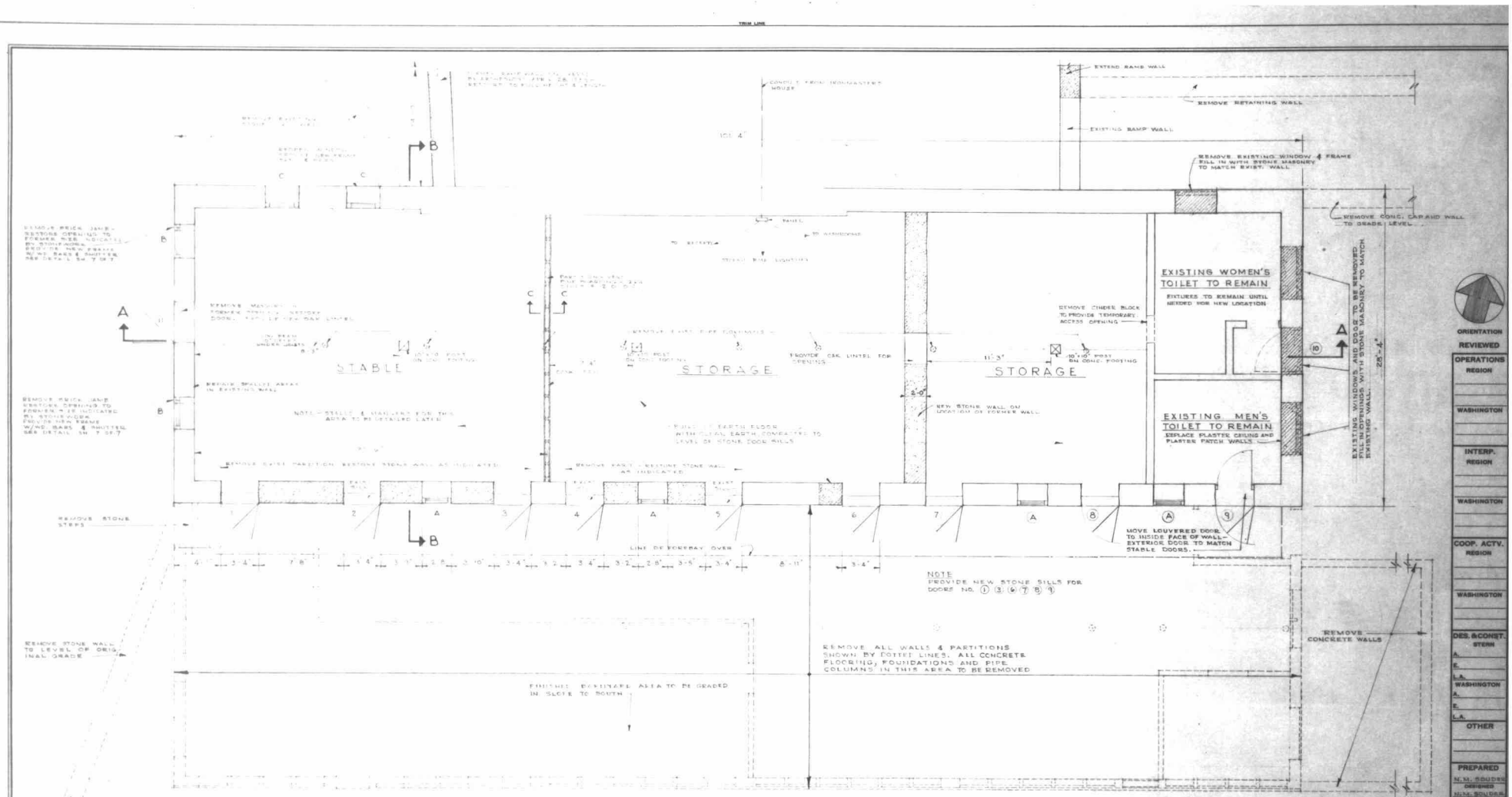
REGION FIVE
PCP
SHEET 1 OF 7
DRAWING NO. NHS-HV 3065
DATE 5-20-51

ORIENTATION REVIEWED

OPERATIONS REGION
WASHINGTON
INTERP. REGION
WASHINGTON
COOP. ACTV. REGION
WASHINGTON
DES. & CONST. STERN
A.
E.
L.A.
WASHINGTON
A.
E.
L.A.
OTHER

PREPARED
N. M. SOLDER
DESIGNED
N. M. SOLDER
DRAWN
CHECKED

REVISED
DATE | INITIAL



STABLE LEVEL PLAN

SCALE — 1/4"=1'-0"

ON MICROFILM

LEGEND

- NEW STONE MASONRY
- EXISTING - TO BE REMOVED
- EXISTING - TO REMAIN
- NEW WOOD CONSTRUCTION

NOTE

ALL DIMENSIONS MUST BE VERIFIED AT THE SITE.

BASIC DATA

RECOMMENDED — DATE

APPROVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
PREPARED BY EASTERN OFFICE

STABLE LEVEL PLAN
TITLE OF DRAWING
VILLAGE BARN - RESTORATION
LOCATION WITHIN AREA
HOPEWELL VILLAGE NATIONAL HISTORIC SITE
NAME OF AREA

REGION FIVE
PCF
SHEET 2 OF 7
DRAWING NO. NHS-HV 3065
DATE 5-20-54

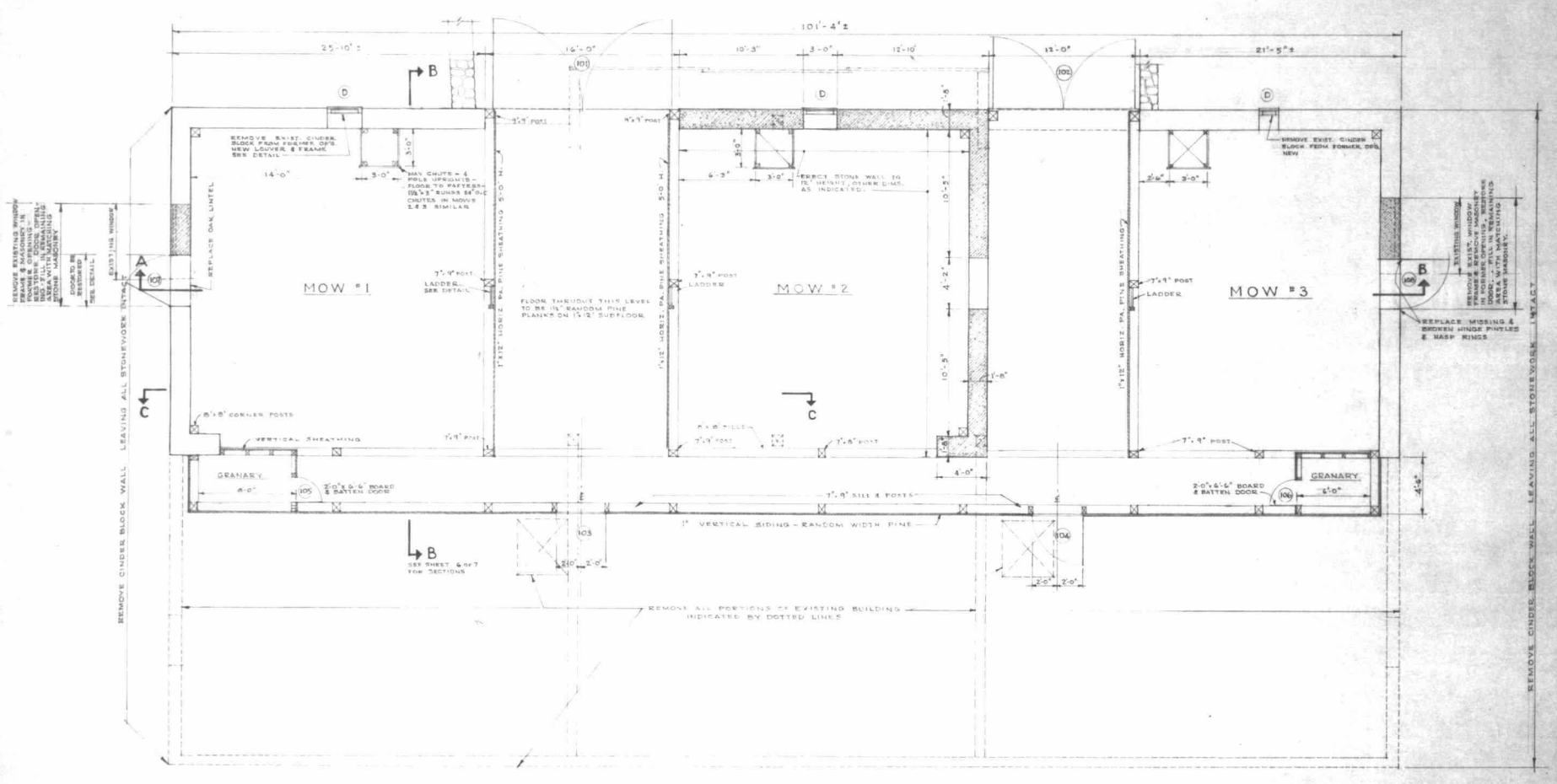
ORIENTATION REVIEWED

OPERATIONS REGION — WASHINGTON
INTERP. REGION — WASHINGTON
COOP. ACTV. REGION — WASHINGTON
DES. & CONST. STERN — A. E. L.A.
WASHINGTON — A. E. L.A.
OTHER

PREPARED N.M. SOUDER
DESIGNED N.M. SOUDER
DRAWN
CHECKED

REVISED

DATE	INITIAL



MOW LEVEL PLAN

SCALE – 1/4"=1'-0"

BASIC DATA

RECOMMENDED

APPROVED

DATE

SCALE

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
PREPARED BY EASTERN OFFICE

MOW LEVEL PLAN
TITLE OF DRAWING
VILLAGE BARN RESTORATION
LOCATION WITHIN AREA
HOPEWELL VILLAGE NATIONAL HISTORIC SITE
NAME OF AREA

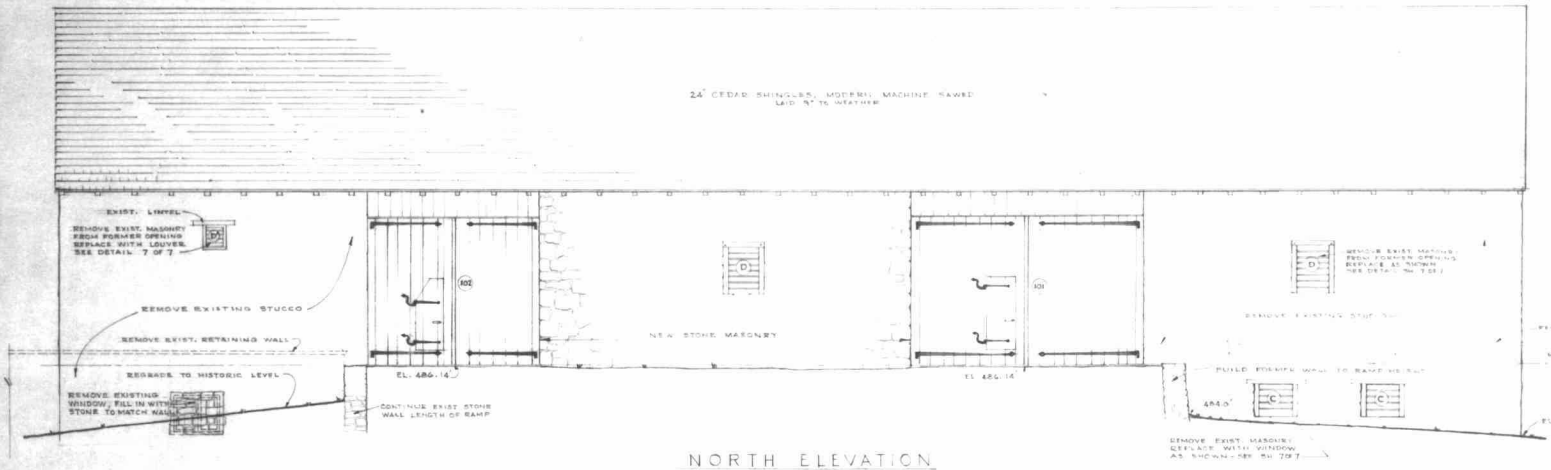
REGION FIVE
PCP
SHEET 3 OF 7
DRAWING NO. NHS-HV 3063
DATE 5-20-53

ORIENTATION REVIEWED
OPERATIONS REGION
WASHINGTON
INTERP. REGION
WASHINGTON
COOP. ACTV. REGION
WASHINGTON
DES. & CONST. EASTERN A. E. L.A.
WASHINGTON A. E. L.A.
OTHER

PREPARED SOUDER
DESIGNED SOUDER
DRAWN
CHECKED

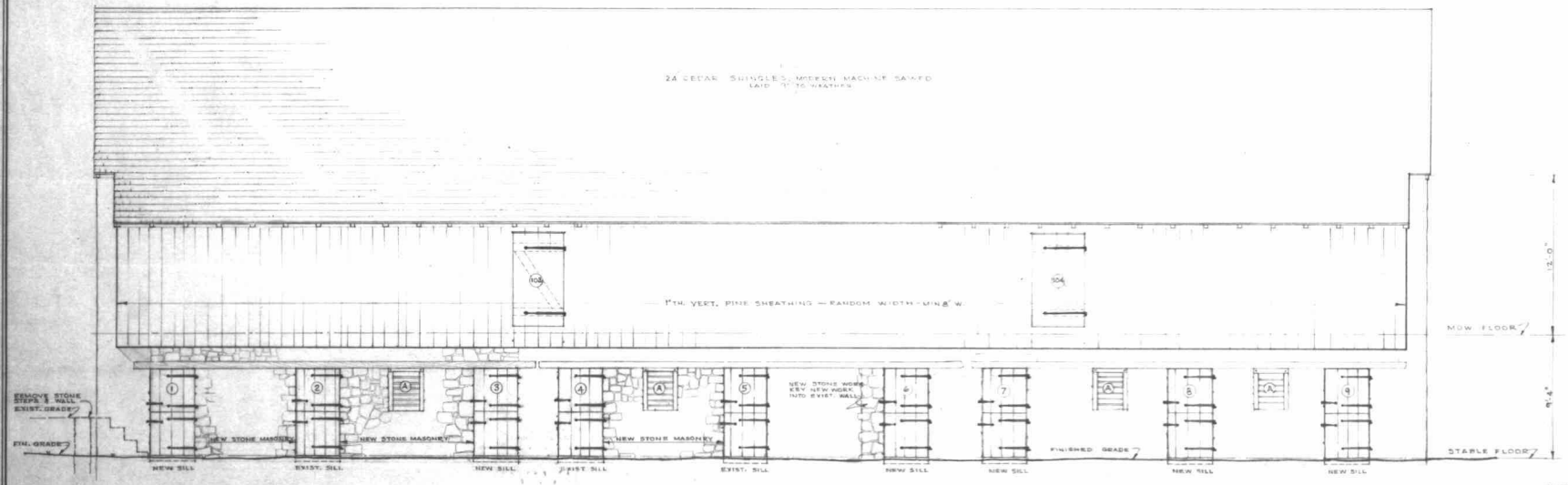
REVISED DATE | INITIAL

TRIM LINE



NORTH ELEVATION

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



SOUTH ELEVATION

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

BASIC DATA

RECOMMENDED: _____ DATE

APPROVED _____

SCALE

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
PREPARED BY
EASTERN
OFFICE

ELEVATIONS
TITLE OF DRAWING
VILLAGE BARN RESTORATION
LOCATION WITHIN AREA
HOPEWELL VILLAGE NATIONAL HISTORIC SITE
NAME OF AREA

ORIENTATION REVIEWED

OPERATIONS
REGION
WASHINGTON

INTERP.
REGION
WASHINGTON

COOP. ACTV.
REGION
WASHINGTON

DES. & CONST.
EASTERN
A.
E.
L.A.
WASHINGTON
A.
E.
L.A.
OTHER

PREPARED
SOUDER
DESIGNED
SOUDER
DRAWN
CHECKED

REVISED
DATE | INITIAL

REGION
FIVE
PCP
SHEET 4 OF 7
DRAWING NO.
NHS-HV.
30065
DATE 5-30-59

DETAIL OF SHUTTER HINGE

SCALE - 1/2 FULL SIZE

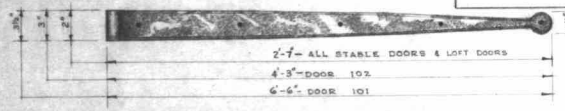
ORIGINAL FOUND IN EXCAVATION UNDER WEST WINDOW OPG. APRIL 29, 1959

WROUGHT IRON

NOTE

DUE TO THE GIFT OF EDGAR DIMOCK OF POTTSTOWN P.O. OF A LARGE ASSORTMENT OF ANTIQUE HINGES OF THE TYPE AND SIZE REQUIRED - THE RE-REPRODUCTION OF THE HARDWARE DETAILED HERE WILL NOT BE RE-QUIRED.

AUG. 21, 1959

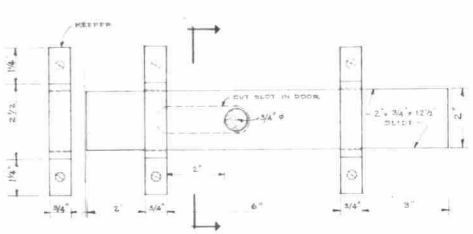


DETAIL OF DOOR HINGES

WROUGHT IRON

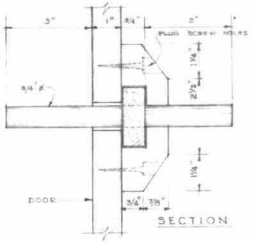
DETAIL OF SLIDE BOLT

SCALE - 1/2 FULL SIZE

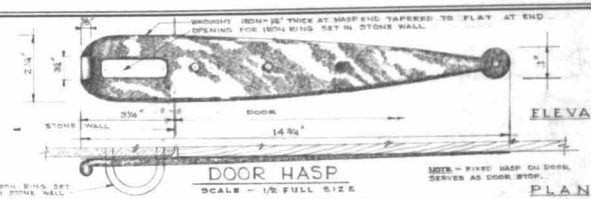


DETAILS OF SLIDE BOLTS FOR DOORS 101 & 102

SCALE - 1/2 FULL SIZE



SECTION

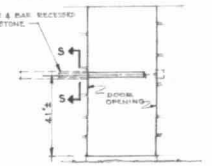


ELEVATION

DOOR HASP

SCALE - 1/2 FULL SIZE

NOTE - FIXED HASP ON DOOR, SERVES AS DOOR STOP.

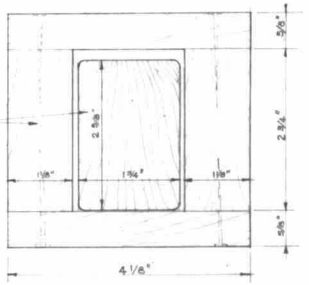


ELEVATION

SCALE - 3/8"=1'-0"

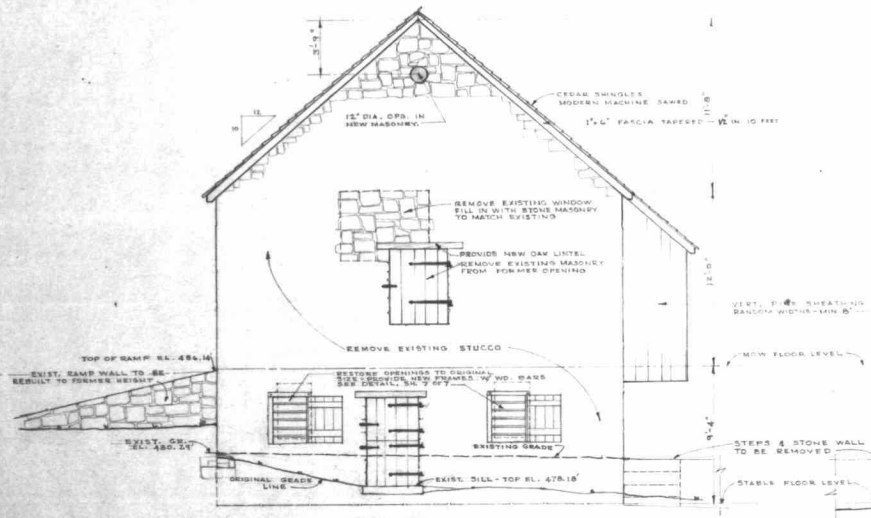
PLAN

DETAIL OF FIXED W.L. HASP COPIED FROM ORIGINAL ON BARN AT "INGLEBRIGH", LIONVILLE, PA.



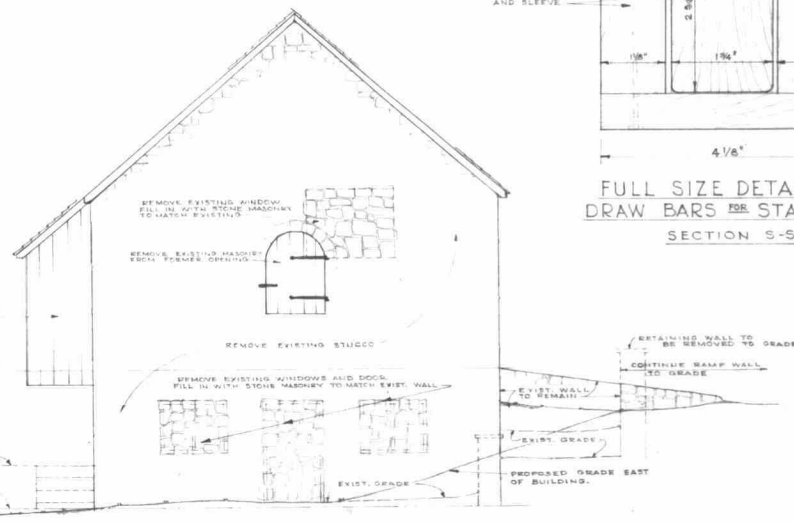
FULL SIZE DETAIL OF DRAW BARS FOR STABLE DOORS

SECTION S-S



WEST ELEVATION

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



EAST ELEVATION

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

ON MICROFILM

BASIC DATA

RECOMMENDED _____ DATE

APPROVED _____

SCALE

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
PREPARED BY EASTERN OFFICE

TITLE OF DRAWING: ELEVATIONS & DETAILS

LOCATION WITHIN AREA: VILLAGE BARN RESTORATION

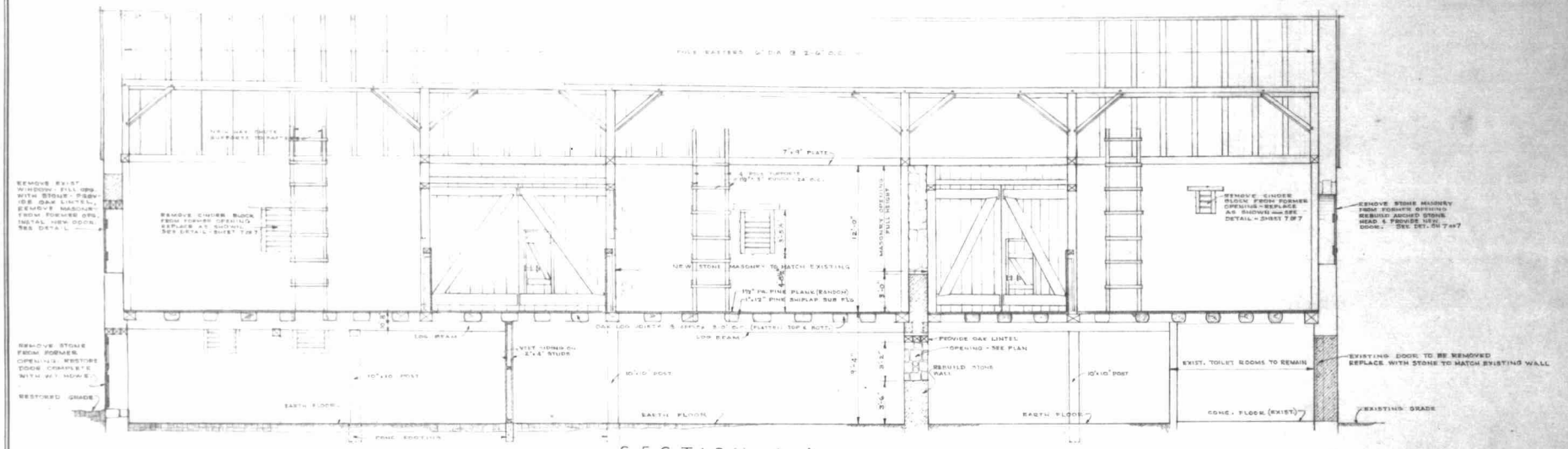
NAME OF AREA: HOPEWELL VILLAGE NATIONAL HISTORIC SITE

ORIENTATION REVIEWED

OPERATIONS REGION
WASHINGTON
INTERP. REGION
WASHINGTON
COOP. ACTV. REGION
WASHINGTON
DES. & CONST. STERN
A.
E.
L.A.
WASHINGTON
A.
E.
L.A.
OTHER

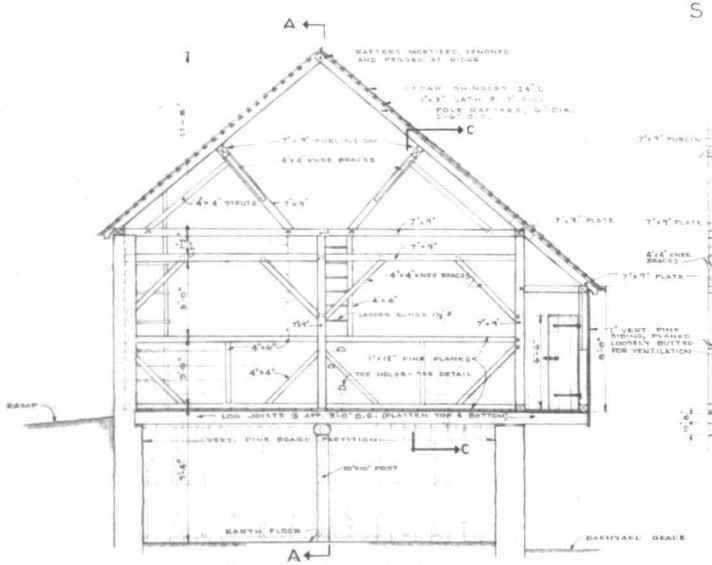
PREPARED
N.M. SOLDER, DESIGNED
N.M. SOLDER, DRAWN
CHECKED
REVISED
DATE | INITIAL

REGION FIVE
PCP
SHEET 5 OF 7
DRAWING NO. NHS-HV 3065
DATE 5-20-59



SECTION A-A

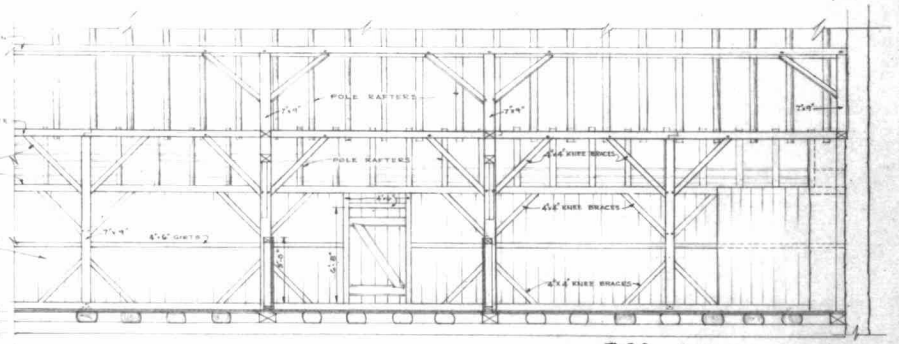
SCALE - 1/4"-1'-0"



SECTION B-B

SCALE - 1/4"-1'-0"

TYPICAL BAY



SECTION C-C

SCALE - 1/4"-1'-0"

NOTES

1. - THE BEARING ENDS OF STRUCTURAL MEMBERS, JOISTS AND MORTISE & TENON JOINTS TO BE COATED WITH 5% PENTACHLOROPHENOL SOLUTION.
2. - ALL LUMBER SIZES SHOWN ARE TO BE FULL DIMENSION.

BASIC DATA

RECOMMENDED

APPROVED

DATE

SCALE

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
PREPARED BY
EASTERN
OFFICE

SECTIONS
TITLE OF DRAWING

VILLAGE BARN RESTORATION
LOCATION WITHIN AREA

HOPEWELL VILLAGE NATIONAL HISTORIC SITE
NAME OF AREA

ORIENTATION REVIEWED

OPERATIONS REGION
WASHINGTON

INTERP. REGION
WASHINGTON

COOP. ACTV. REGION
WASHINGTON

DES. & CONST. EASTERN
A.
E.
L.A.

WASHINGTON
A.
E.
L.A.

OTHER

PREPARED
SOUDER

DESIGNED
SOUDER, GRAHN

CHECKED

REVISED
DATE | INITIAL

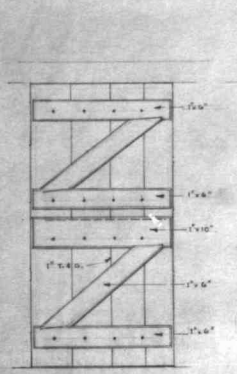
REGION
FIVE

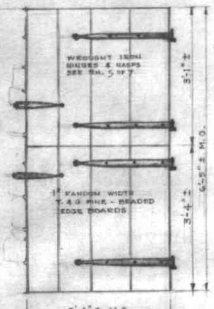
PCP

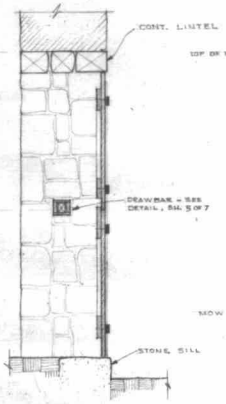
SHEET 6 OF 7

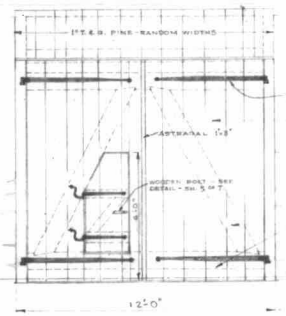
DRAWING NO.
NHS:- HV
3.0:6.5

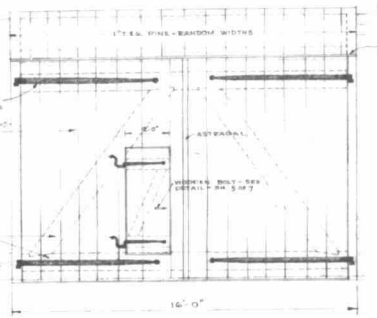
DATE 5-20-59

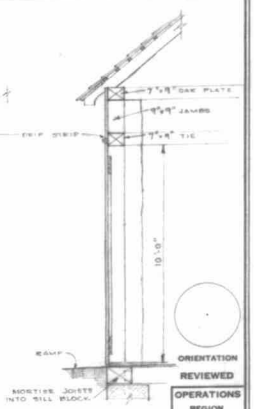


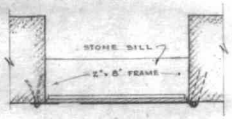


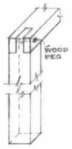




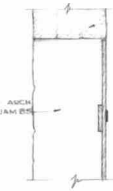




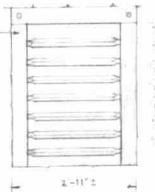


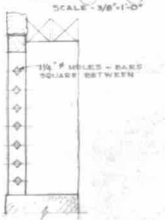


ISOMETRIC DETAIL OF MORTISE AND TENON JOINTS TO BE USED IN ALL WINDOW FRAMES



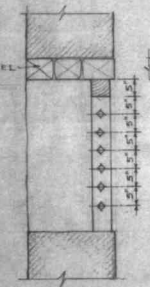
NOTE - ALL LUMBER SPECIFIED IS TO BE FULL DIMENSION.

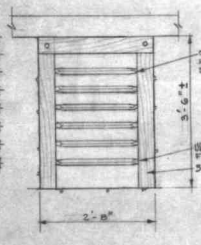


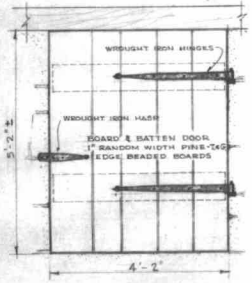


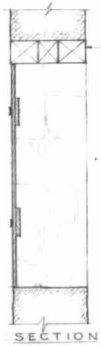
MOW WINDOWS - NORTH ELEV.
SCALE - 3/4"=1'-0"
TYPE (D) — TYPE (D1) SIMILAR

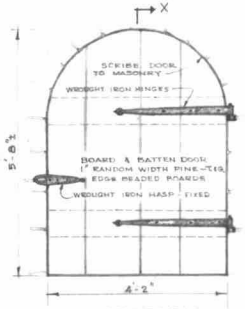
DETAILS OF STABLE DOORS - Nº ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑪
SCALE - 3/4"=1'-0"

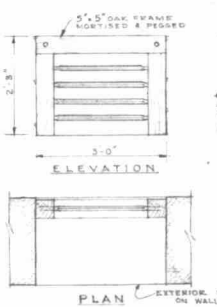


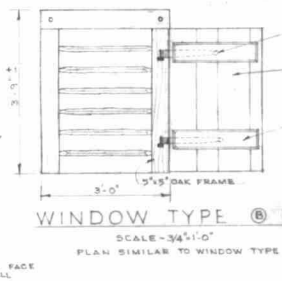




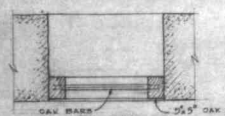




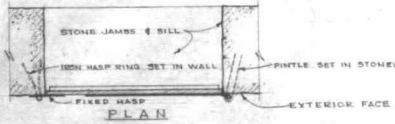




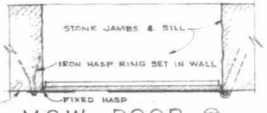
WINDOW TYPE (B) (WEST ELEV. ONLY)
SCALE - 3/4"=1'-0"
PLAN SIMILAR TO WINDOW TYPE (C) PLAN



TYPE (A)
DETAIL - STABLE WINDOWS
SCALE - 3/4"=1'-0"



MOW DOOR (101) - WEST ELEV.
SCALE - 3/4"=1'-0"



MOW DOOR (102)
EAST ELEV.
SCALE - 3/4"=1'-0"

WINDOW TYPE (C)
SCALE - 3/4"=1'-0"

NOTE

ALL DIMENSIONS MUST BE VERIFIED AT THE SITE. THERE ARE MINOR VARIATIONS IN THE EXISTING DOOR AND WINDOW OPENINGS. ALL SIZES SHOWN ARE NOMINAL. ALL LUMBER SIZES ARE TO BE FULL THICKNESS

RECOMMENDED — DATE

APPROVED

SCALE

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
DRAWN BY
EASTERN
OFFICE

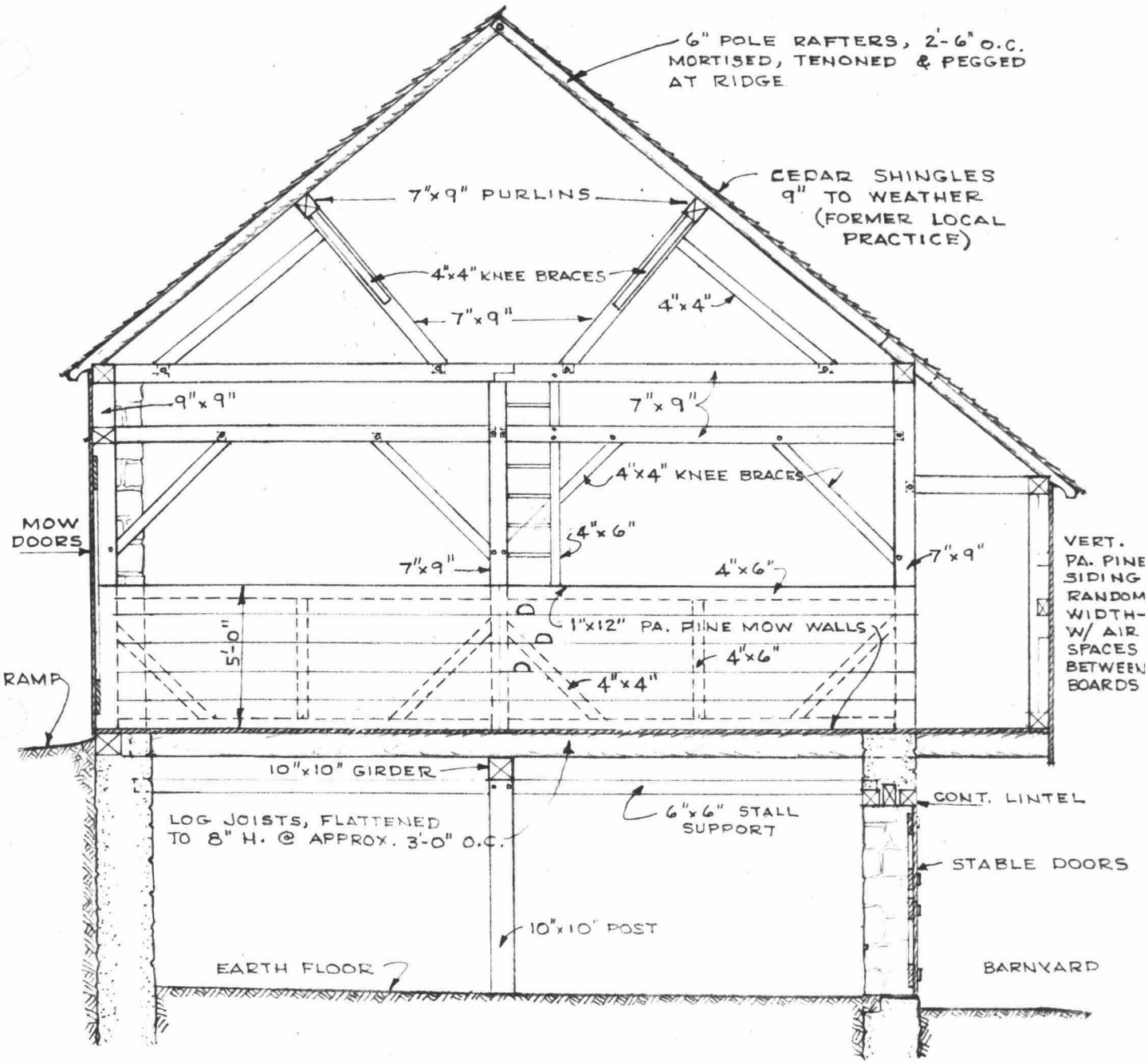
DETAILS
TITLE OF DRAWING
VILLAGE BARN - RESTORATION
LOCATION WITHIN AREA
HOPEWELL VILLAGE NATIONAL HISTORIC SITE
NAME OF AREA

ORIENTATION REVIEWED
OPERATIONS
REGION
WASHINGTON
INTERP. REGION
WASHINGTON
COOP. ACTV. REGION
WASHINGTON
DES. & CONST. EASTERN
A.
E.
L.A.
WASHINGTON
A.
E.
L.A.
OTHER
PREPARED
DESIGNED
H.M. BOUDER, DRAWN
CHECKED
REVISED DATE | INITIAL

REGION FIVE
PCP
SHEET 7 OF 7
DRAWING NO. NHS:-HV 3026 5
DATE 5-20-39

ON MICROFILM

BASIC DATA



NOTE —

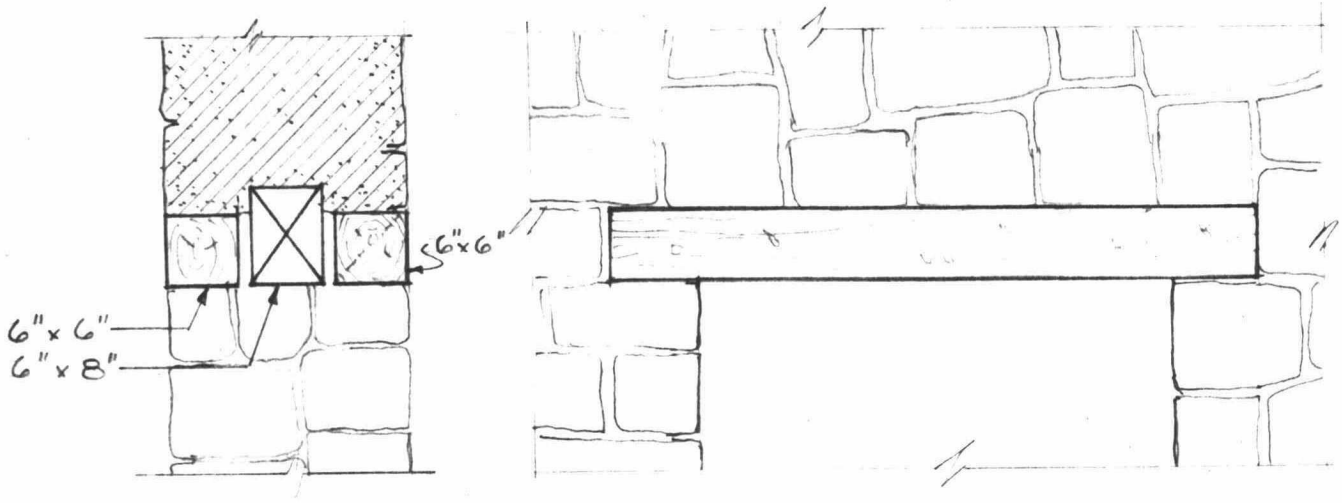
1. — ALL FRAMING MORTISED, TENONED AND PEGGED. NO NAILS WERE USED.
2. — ALL LUMBER, UNLESS OTHERWISE NOTED, IS FULL DIMENSION OAK.

TYPICAL BAY (SHOWING FRAMING)

SCALE - 3/16" = 1'-0"

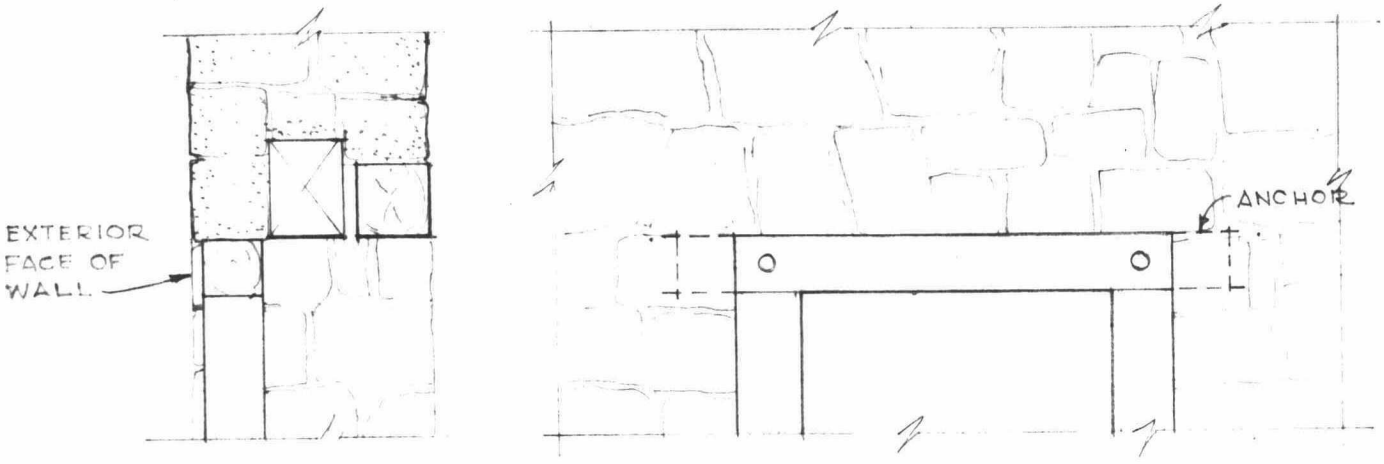
N. M. SOUDER

SHEET 1



SECTION ELEVATION

EXPOSED LINTEL

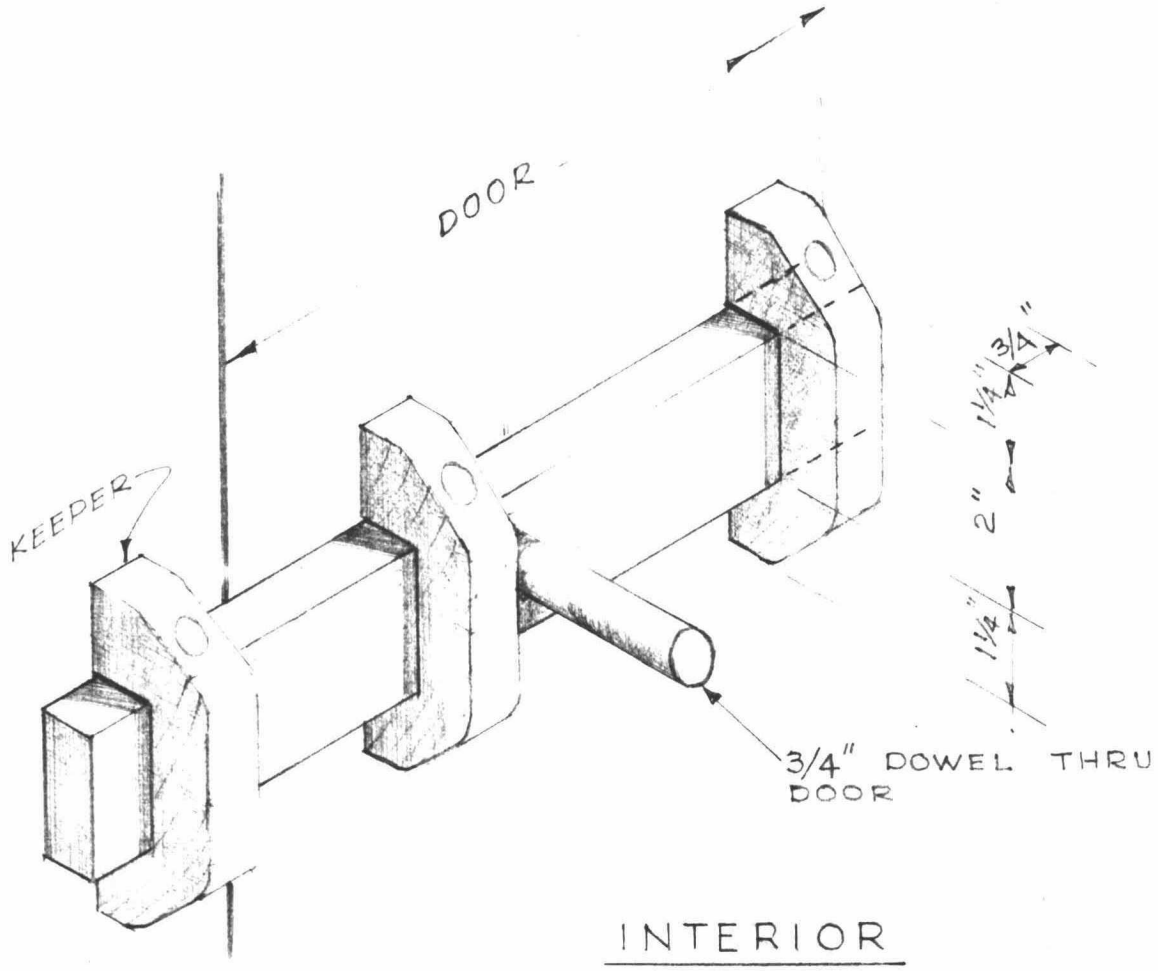


SECTION ELEVATION

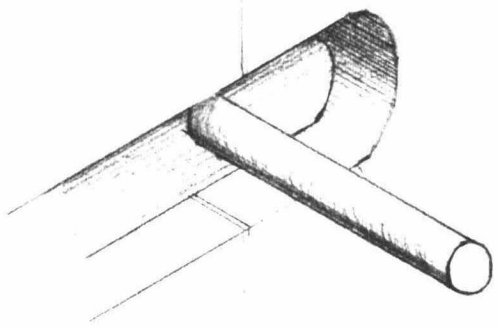
CONCEALED LINTEL

LINTEL DETAILS

SCALE - 3/4"=1-0"



INTERIOR



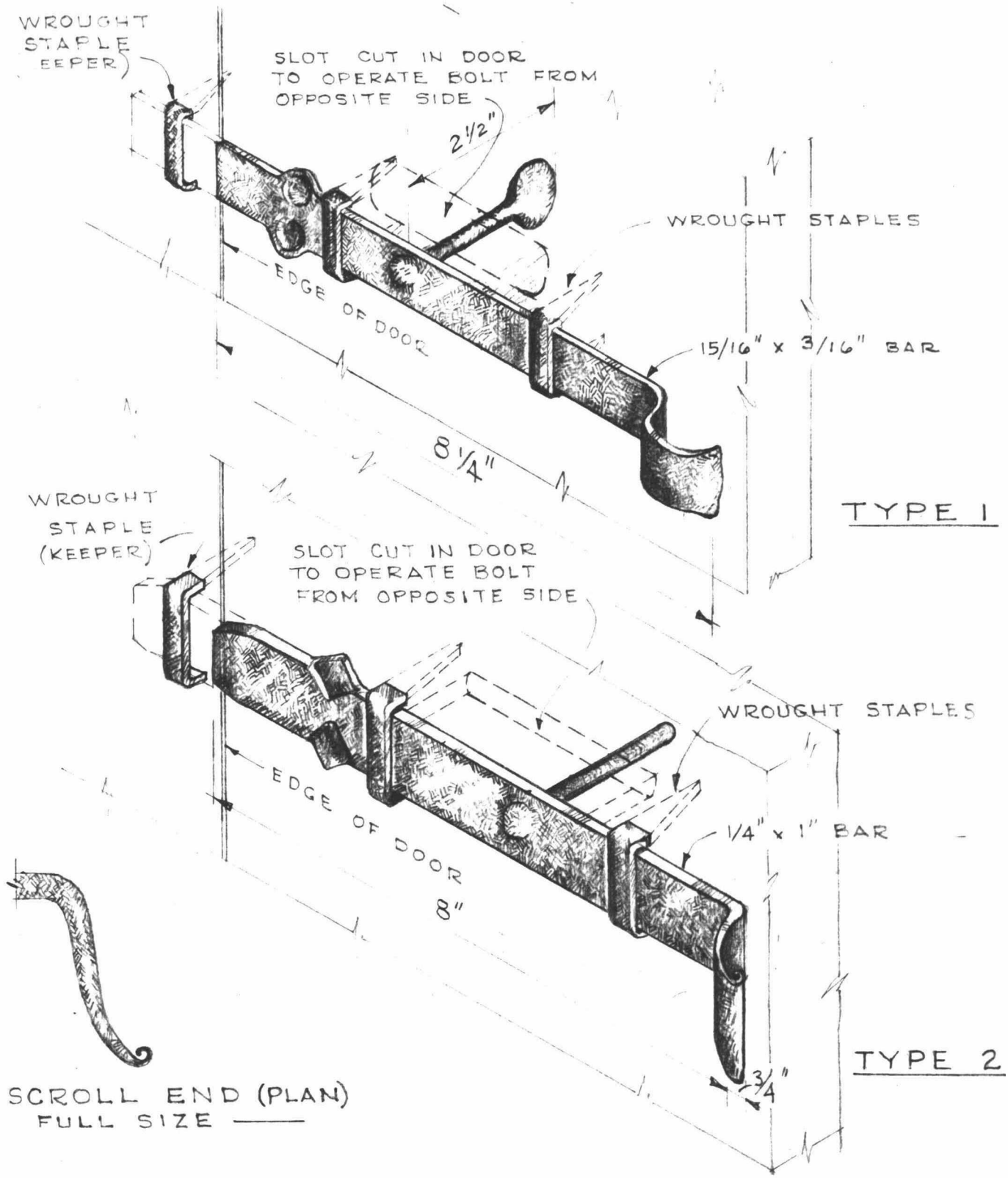
EXTERIOR

WOOD SLIDE BOLTS

ISOMETRIC

SHEET 3

N. M. SOUDER

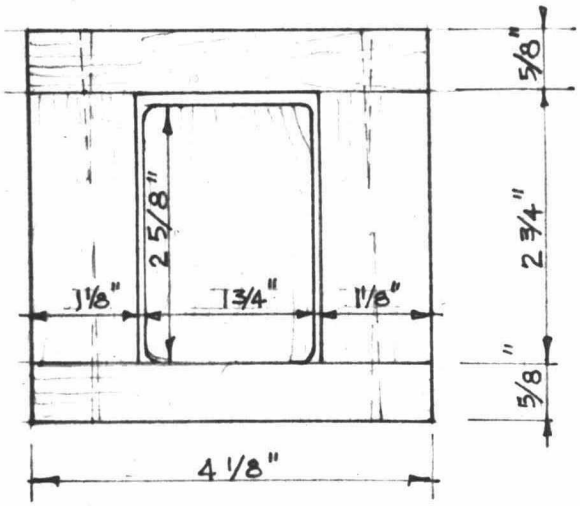


WROUGHT IRON SLIDE BOLTS

ISOMETRIC

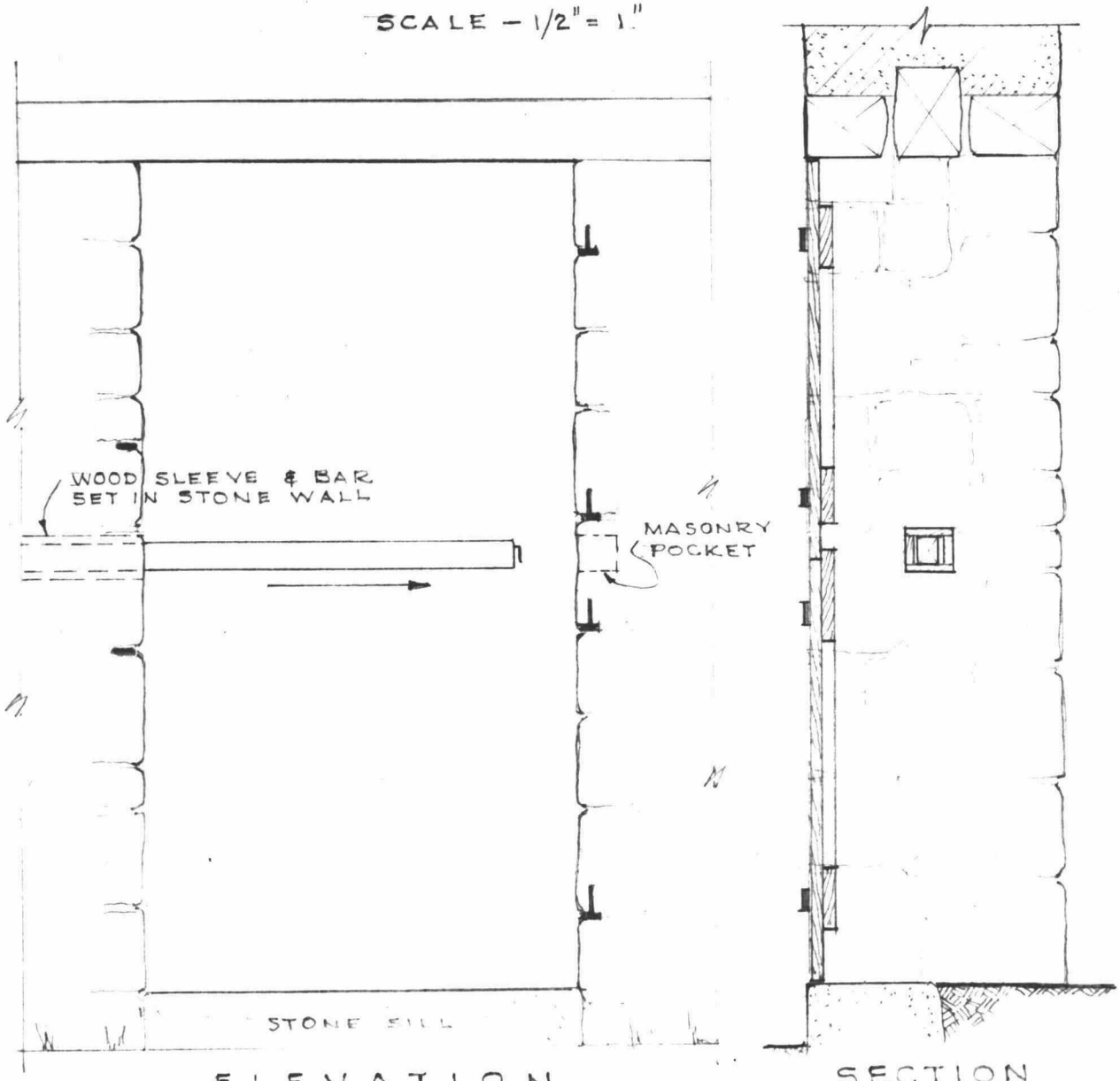
SHEET 4

N. M. SOUDER



DETAIL

SCALE – 1/2" = 1"



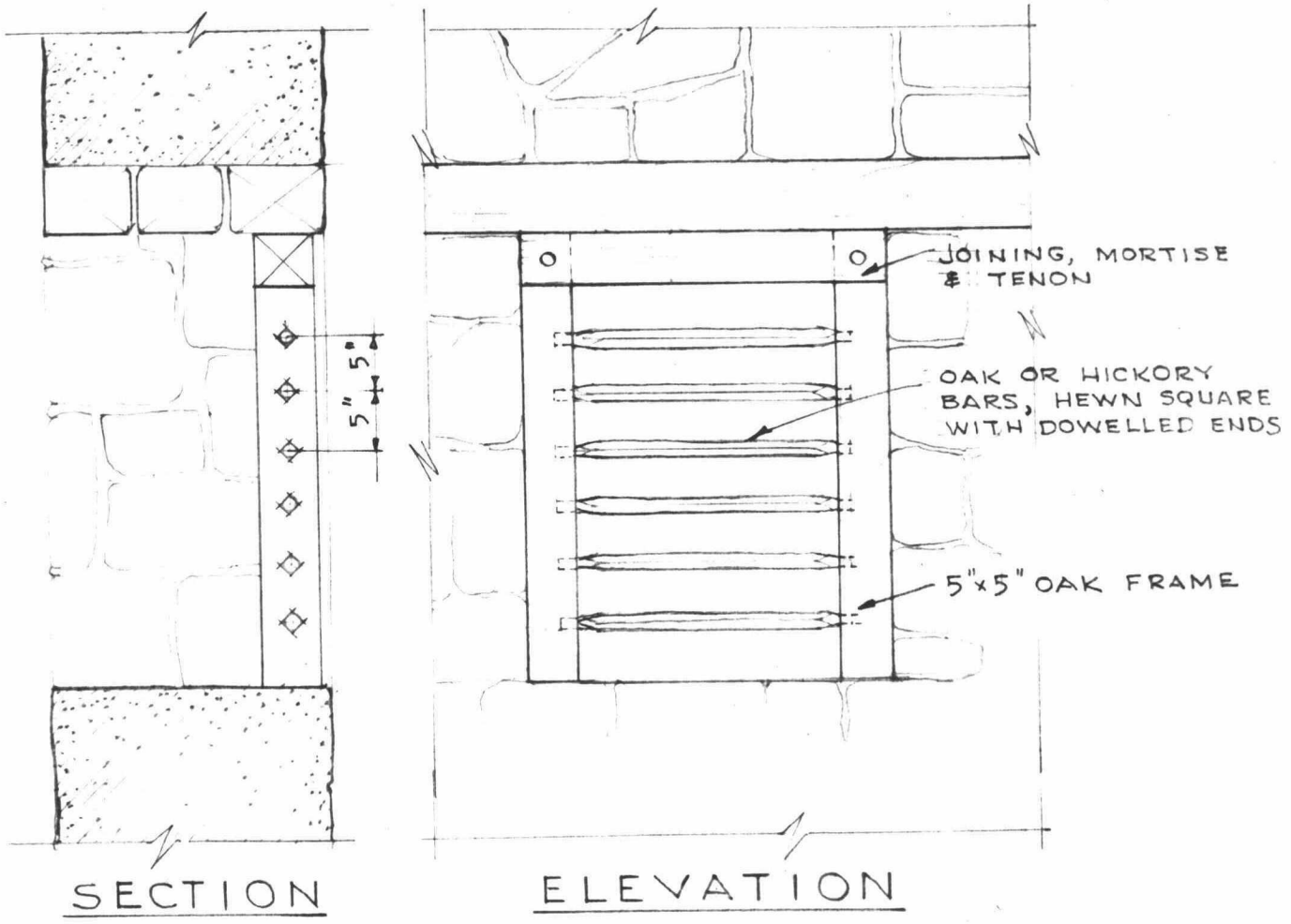
ELEVATION

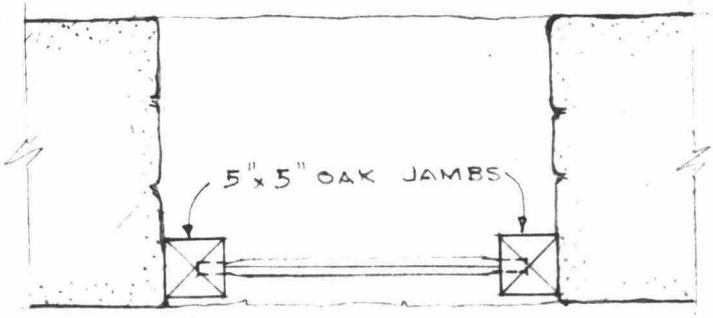
SECTION

DRAW BAR DETAILS

STABLE DOORS

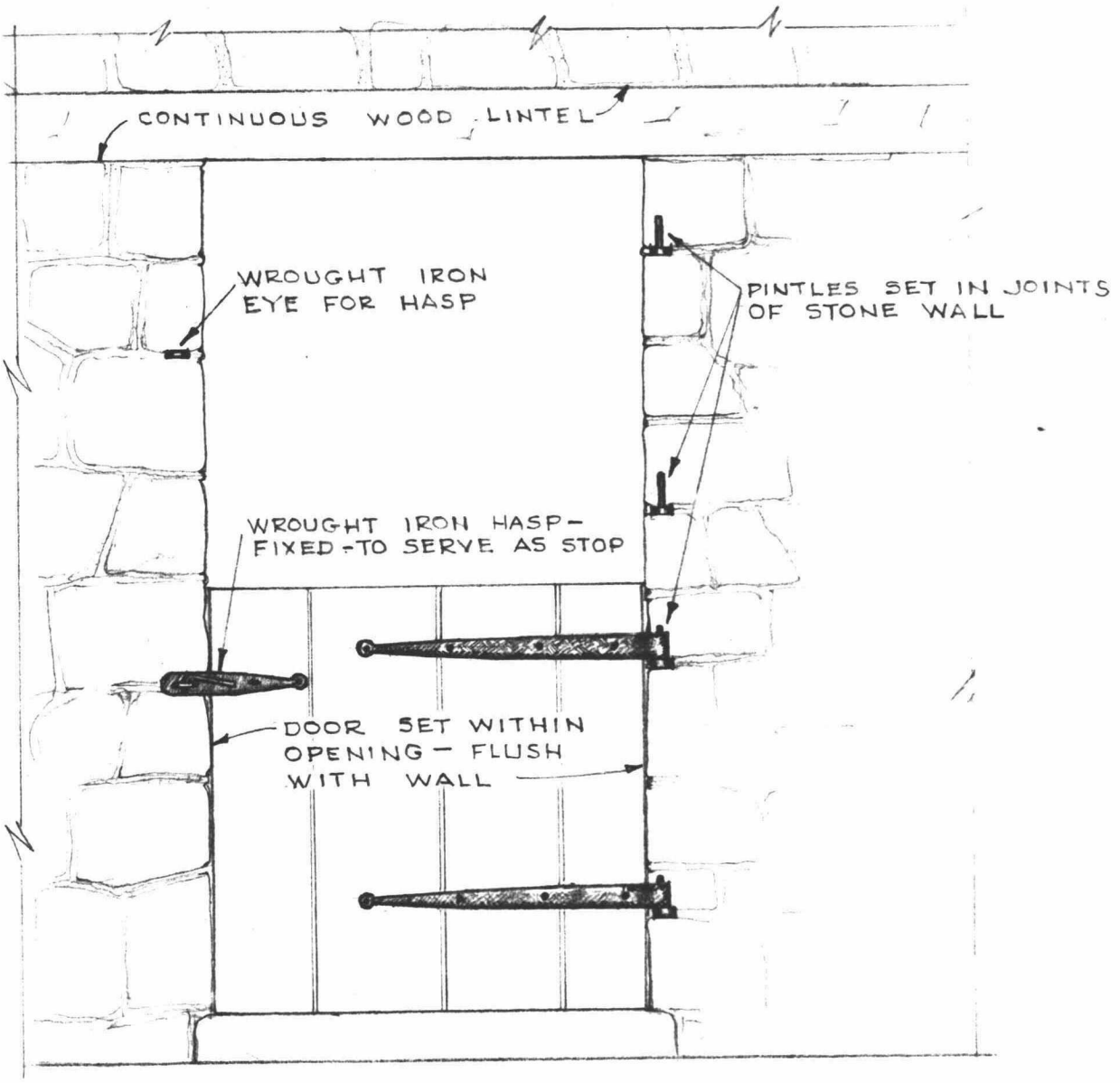
SHEET 7





BARRED OPENING DETAILS

SCALE - 3/4"=1'-0"

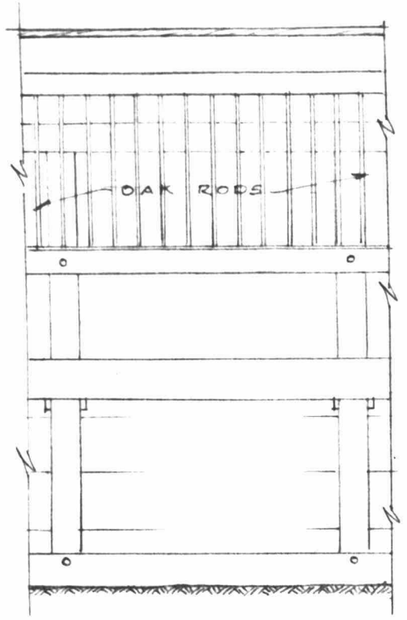


ELEVATION

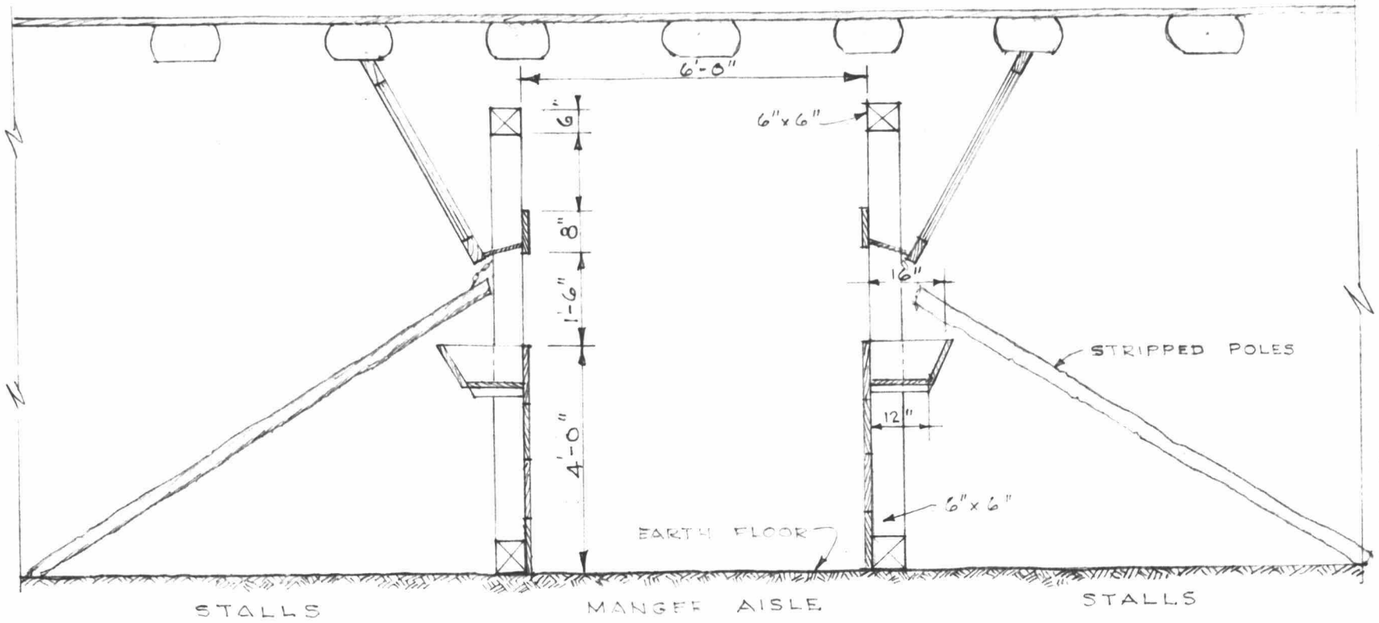
SCALE - 3/4" = 1'-0"

HASP EYE AND PINTLE WITH ANCHOR FOR SETTING IN STONE. JOINTS. ORIGINALS WERE FOUND IN PLACE BUT BROKEN. COPIES WERE MADE FOR THE RESTORATION.

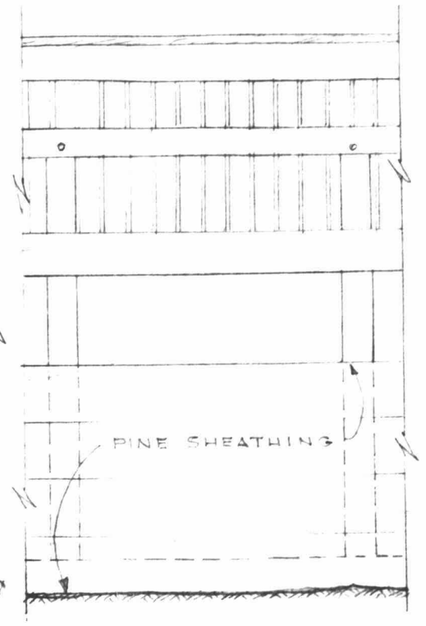
STONE JAMBS - STABLE DOORS



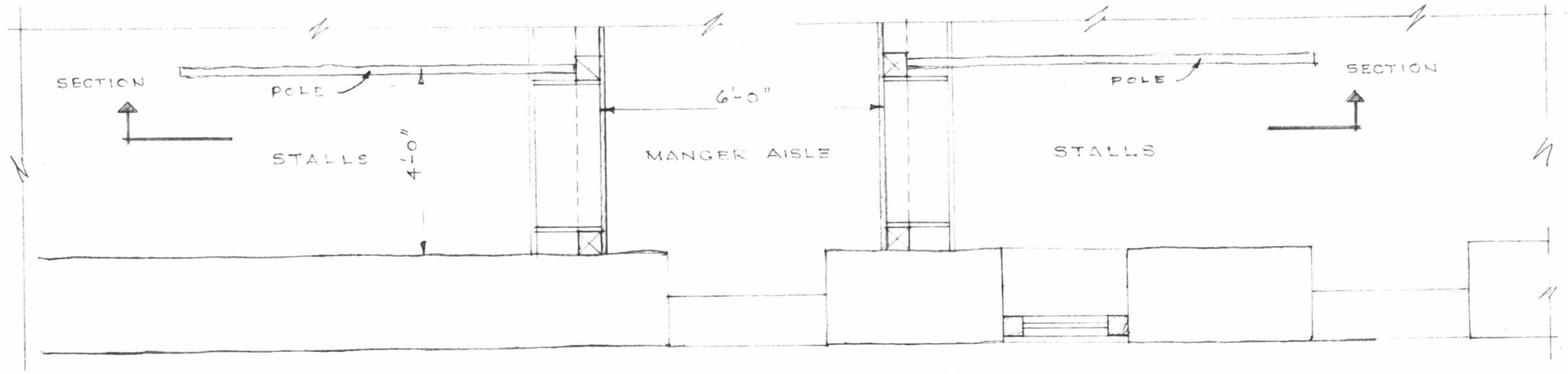
ELEVATION
STALL SIDE



SECTION



ELEVATION
MANGER SIDE



PARTIAL PLAN

STABLE DETAILS

SCALE - 3/8"=1'-0"

VI. ILLUSTRATIONS

ILLUSTRATION NO. 1

The west side of the barn before the change in grade of the north side of the barn as shown in the 1915 Care photo. The frame addition at the right of the picture was the old "Straw Shed" constructed in a period later than the barn restoration date.

Photo: Mr. Care, 1915
Copy neg. on file Hopewell HES No. 47-5

ILLUSTRATION NO. 2

The west side of the barn showing the original structure before the 1926 dairy barn was constructed over it as shown in this Stauffer photo dated 1920.

The grade between the house and barn had at this point undergone some changes as evidenced by the semi-circular light well at the northwest corner of the barn.

Photo: Mr. Stauffer, 1920
Copy neg. on file Hopewell HRS No. 125-06

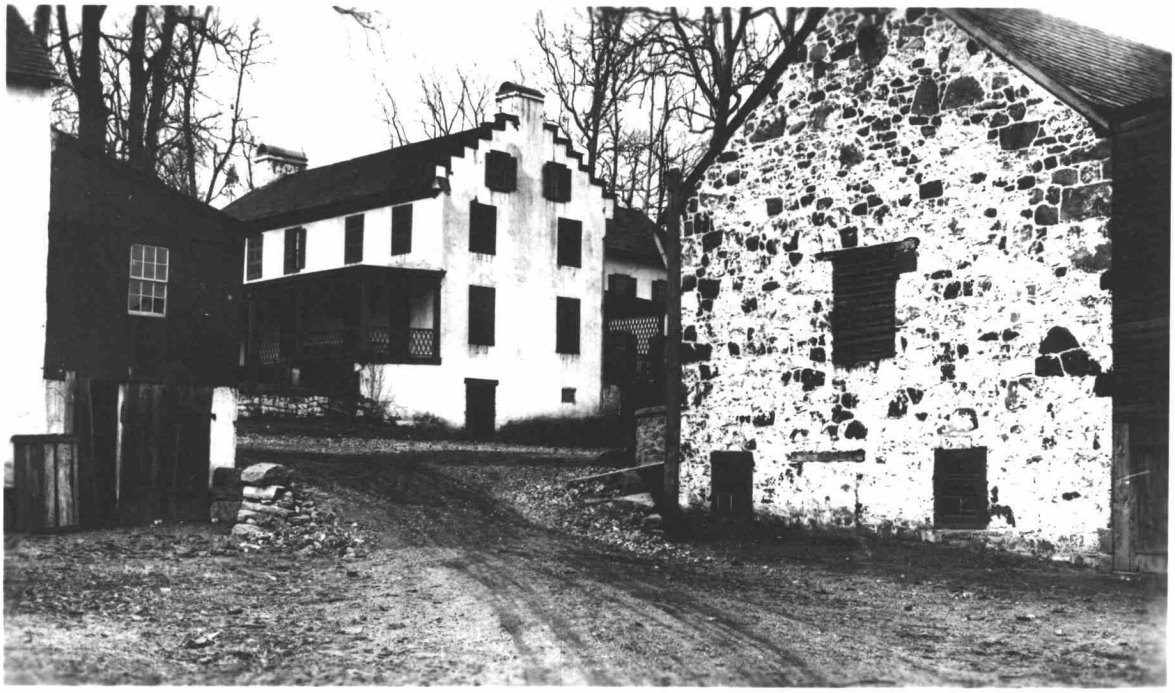


ILLUSTRATION NO. 3

Mow doors of the Charles Messmer barn at Gibraltar, Pa. The doors are not original but the hinges are. It was known that the strap hinges on the Hopewell barn were similar.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. HODC 1369

ILLUSTRATION NO. 4

Stone jamb treatment of the Charles Messmer barn at Gibraltar, Pa. The remaining part of the drew bar is shown projecting from the jamb. In this case the pintles indicate a single door.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. EGDC 1367

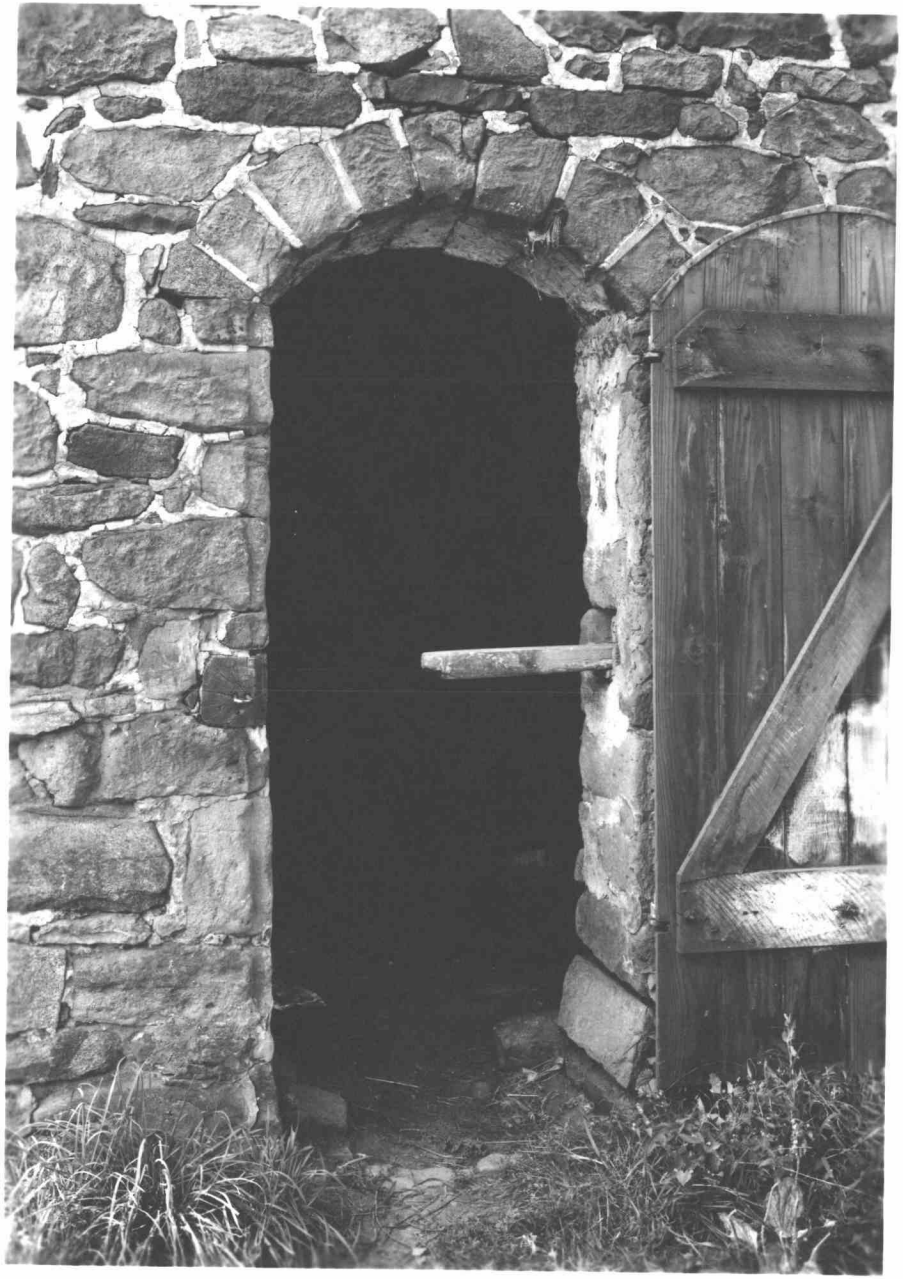


ILLUSTRATION NO. 5

The stone jambs of the stable door on the barn owned by Miss Nellie Bitler at Pine Swamp, Pa.

Photo: Robert D. Ronsaheim, 1959
Copy neg. on file Hopewell NHS No. P1959-533

ILLUSTRATION NO. 6

Stable door Charles Messner farm, Gibralter, indicating examples of early wrought barn hardware. The hasp and hook shown here is arranged to drop. The hasp on the Hopewell barn had to be fixed to serve as a stop against the stone jamb.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. BCDC 1370

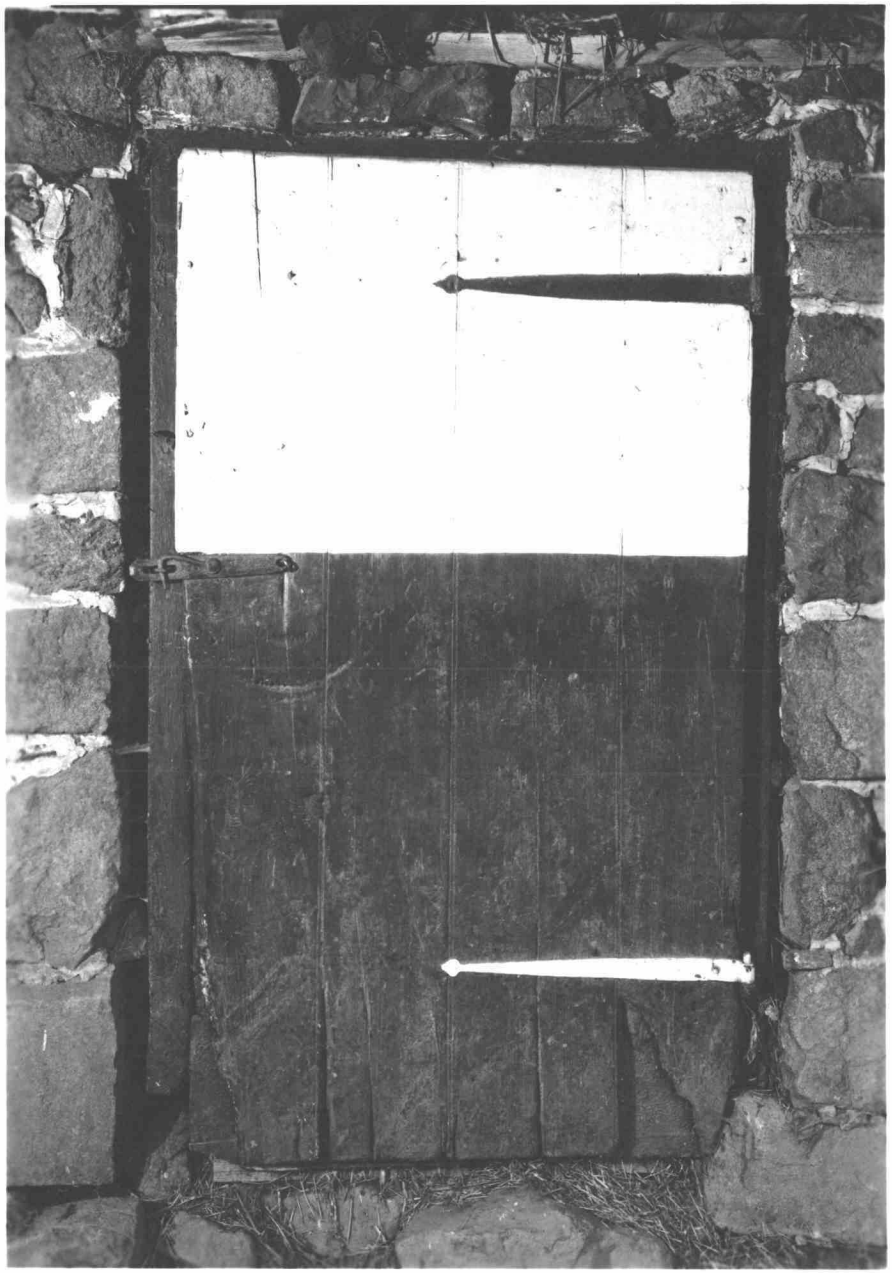


ILLUSTRATION NO. 7

Barred window and solid frame with the typical stone sill. Bars at "Morleigh," Lionville, Chester County, Pa. Several similar jambs with the bars missing were intact in the old walls at Hopewell.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. HOBC 1368

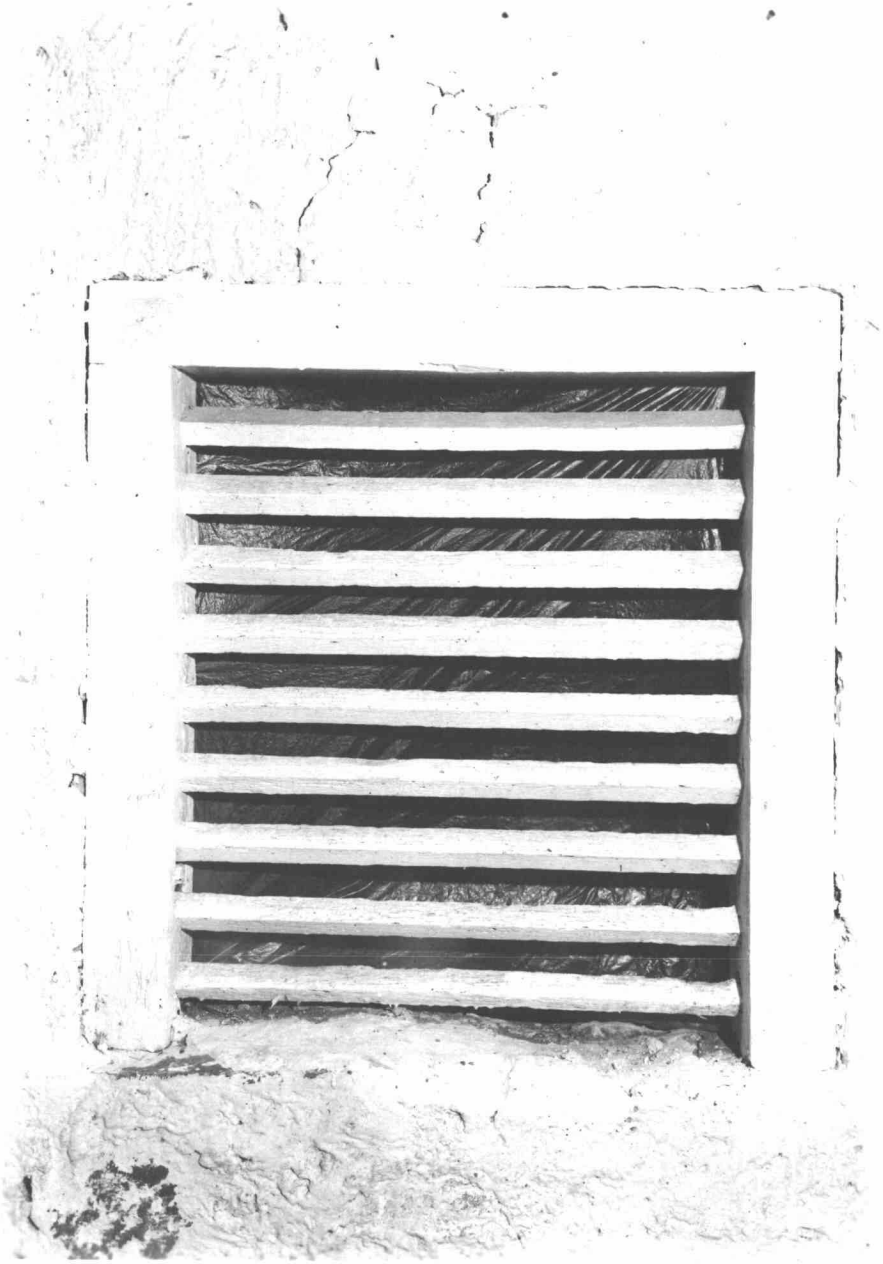


ILLUSTRATION NO. 8

During the process of the removal of the stone fill from one of the north windows of the stable level the old frame was found in place but badly decayed. A copy of the old frame was made as the replacement.

Photo: Robert D. Rosenheim, 1959
Copy neg. on file Hopewell HHS No. P1959-358

5-6

ILLUSTRATION NO. 9

Progress photo showing the demolition of modern barn, the stabilization of the stonework of the east wall and the stone arch restored.

Photo: Robert D. Rossheim, 1959
Copy neg. on file Hopewell NHS No. P1959-121

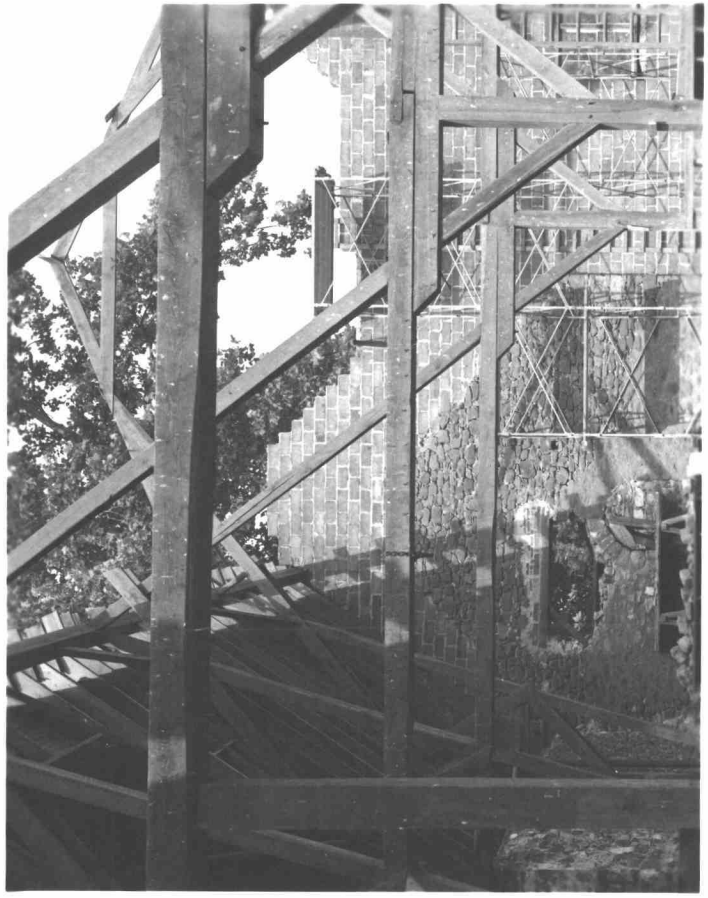


ILLUSTRATION 10

The modern barn in the process of demolition. The half nearest the house contains the old barn walls. The south half was completely removed.

Photo: Robert D. Romsheim, 1959
Copy neg. on file Hopewell HBS No. F1959-200

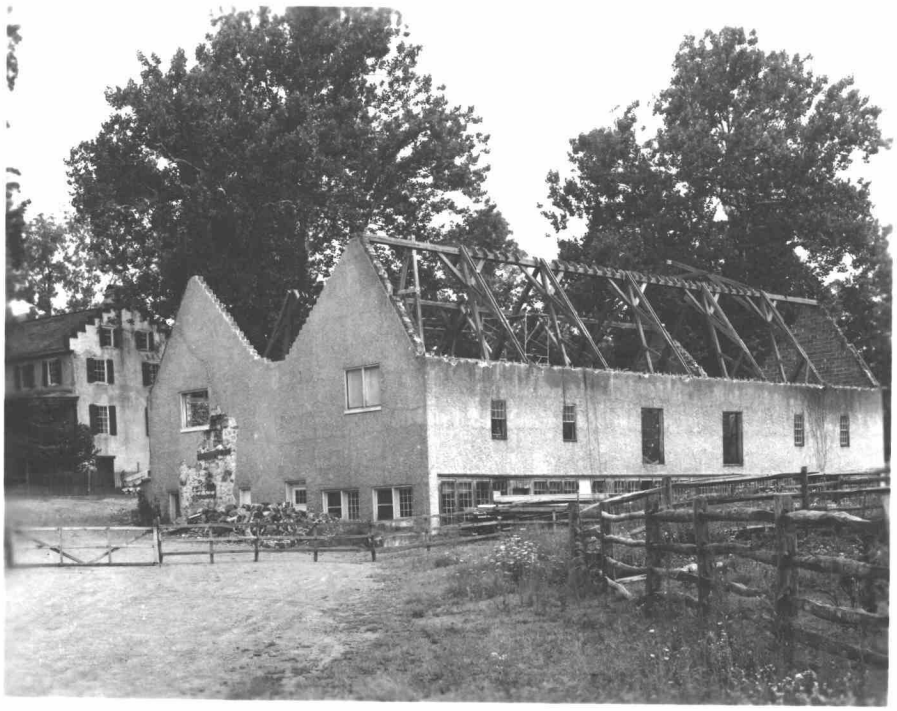


ILLUSTRATION NO. 11

Original opening in the north wall after the concrete brick fill was removed. The frame is the only original remaining in a good state of preservation. It has been preserved and new wood bars inserted into the holes.

Photo: Robert D. Rosenheim, 1959
Copy neg. on file Hopewell HRS No. P1959-189

ILLUSTRATION NO. 12

The re-opening of the old west window in the mow level. The relation of the modern windows to the old can be noted here.

Photo: Robert D. Romaheim, 1959
Copy negs. on file Hopewell NHS No. P1959-110

ILLUSTRATION NO. 13

The stone east wall stabilized before the modern portion was completely removed.

Photo: Robert D. Romsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-219

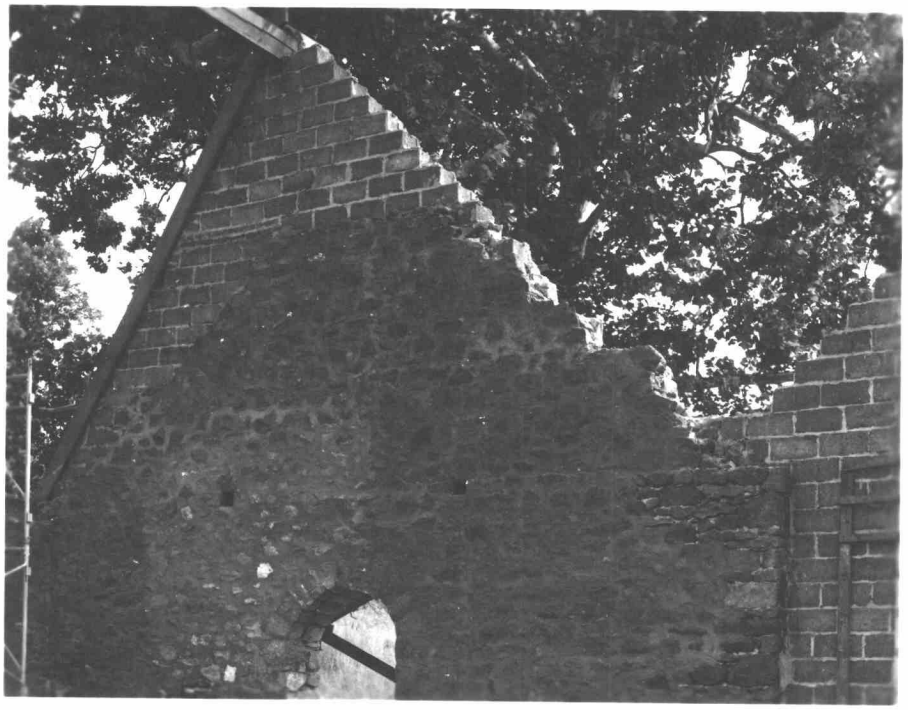
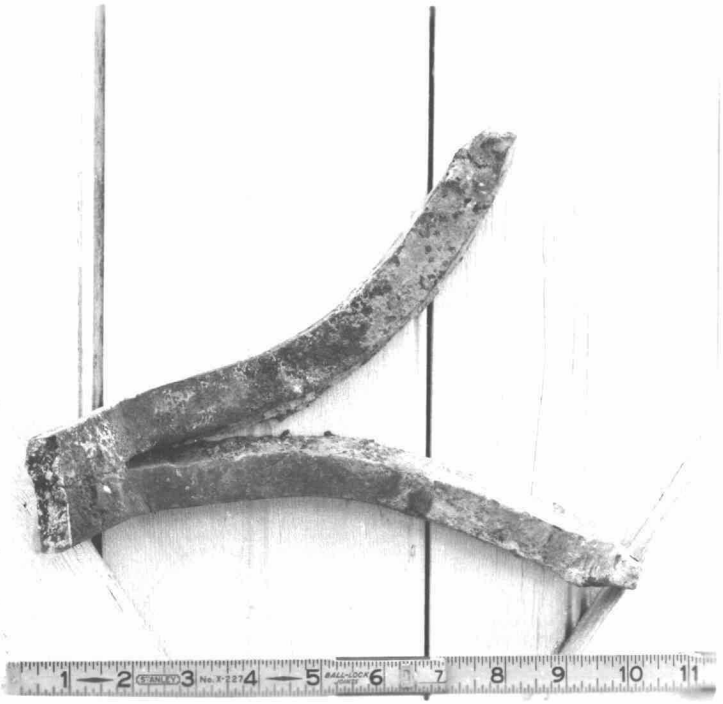


ILLUSTRATION NO. 14

One of the pintle anchors removed from the stone wall. The pintle pin and part of the shank has been broken off. These pintle anchors were reproduced and inserted into the stone walls in the location of the old pintles.

Photo: Robert D. Rosenheim, 1959
Copy neg. on file Hopewell HBS No. P1959-113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2
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11

ILLUSTRATION NO. 15

The remains of the wood draw bar found in the jamb of the enlarged doorway.

Photo: Robert D. Rosenheim, 1959
Copy neg. on file Hopewell HHS No. P1959-128

ILLUSTRATION NO. 16

The stone pier shown was original but the old mortar had deteriorated so as to make the pier unsafe. The pier was photographed and the stones numbered before the rebuilding was begun.

Photo: Robert D. Monahan, 1959
Copy neg. on file Hopewell NHS No. P1959-274

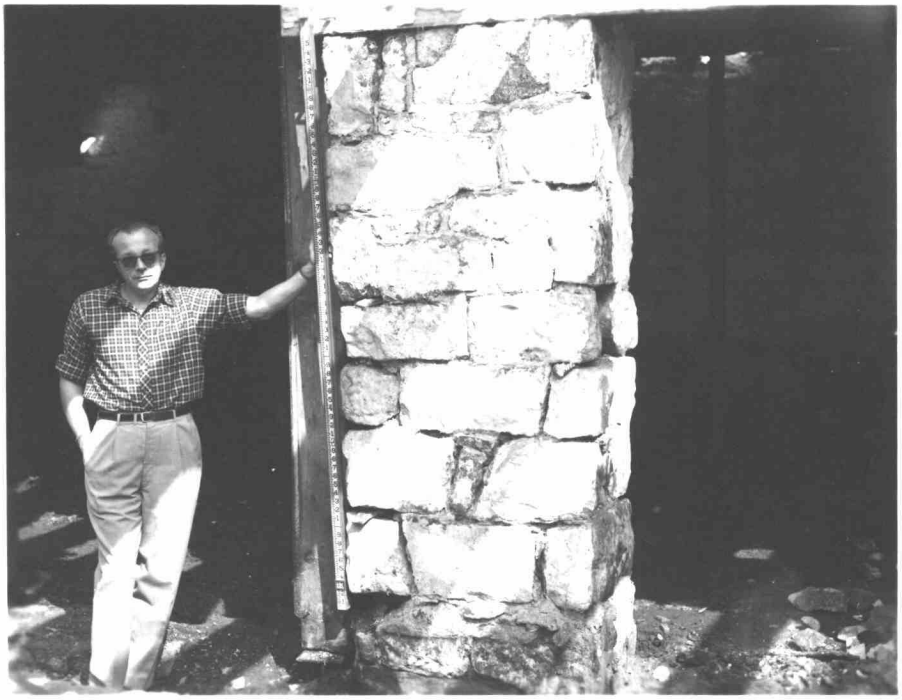

ILLUSTRATION NO. 17

Restored south stable wall with original pier reconstructed. The door and window openings are restored as are the draw bars in the doorways shown in partially closed position.

Photo: Jack E Boucher, January 1960
Copy neg. no. EODC 875

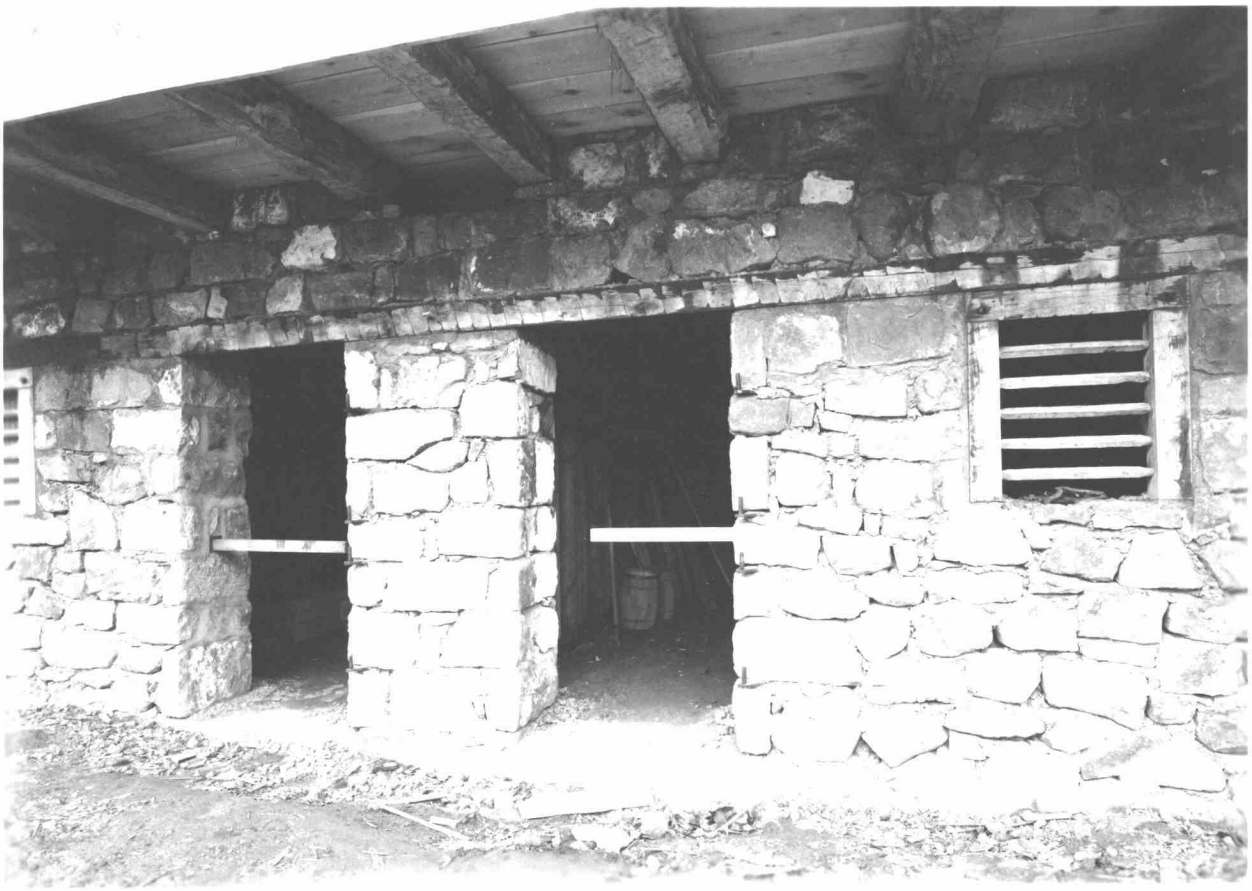

ILLUSTRATION NO. 18

The old stone portions remaining after the removal of the modern barn.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell HRS No. P1959-374

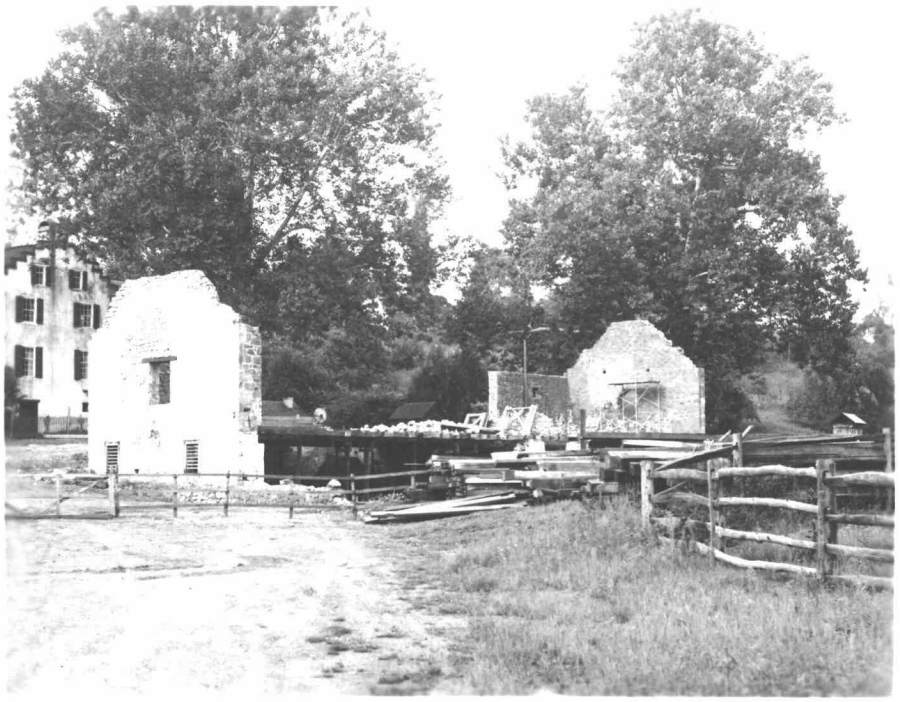

ILLUSTRATION NO. 19

The setting of the log joists-the first step in the erection of the framing. The poplar poles in the foreground later became pole rafters.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell HRB No. P1959-488

ILLUSTRATION NO. 20

The assembling of the framing section before it is raised into place. Note the recess left for the tie beam in the stone wall.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-487

ILLUSTRATION NO. 21

The use of modern tools in an old method of construction. Here a power saw is being used to cut tenons. A pile of completed knee braces is at the left.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell HSS No. P1959-493

ILLUSTRATION NO. 22

The adz is used to finish the tenons after the saw cuts are made.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-492

ILLUSTRATION NO. 23

The Amish crew preparing structural timbers.

The man at the right is using an adz to cut a splice.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-495

ILLUSTRATION NO. 24

The Amish crew preparing the lumber for erection. The man in the center is making oak pins. The one on the left is cutting mortises.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-496

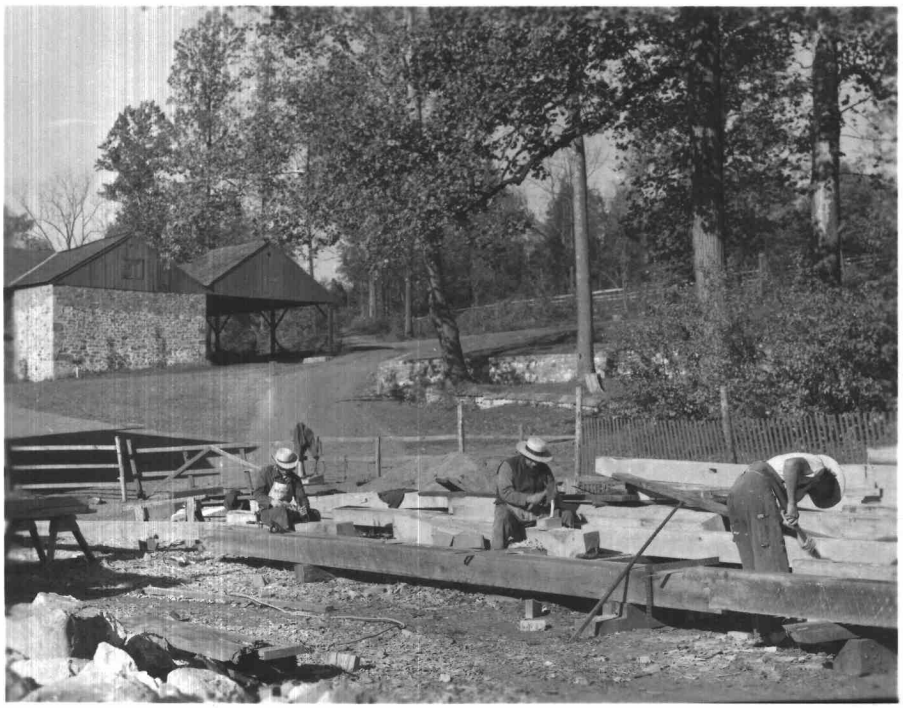

ILLUSTRATION NO. 25

The method of setting rafters in place. The "coffins" were cut into the plate prior to its being raised into place.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-509

ILLUSTRATION NO. 26

Part of the framing in place. The plates and purlins in the first bay have been set.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-507

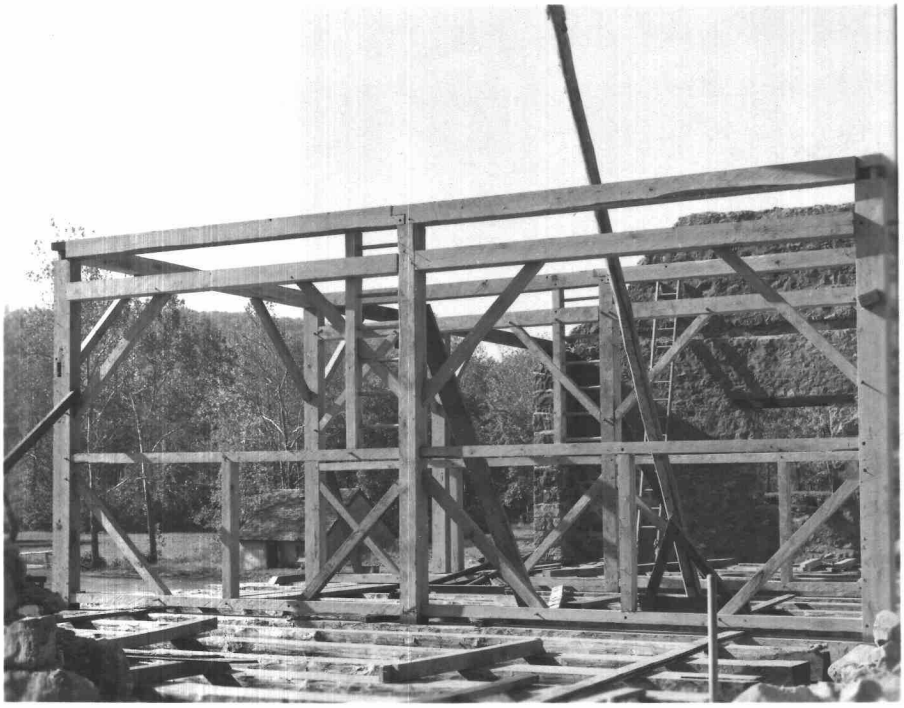

ILLUSTRATION NO. 27

Detail of framing--south side--showing mortise and tenon and lap joint at the plate line. The mortise lower on the upright is for the knee brace of the next section of framing.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-505

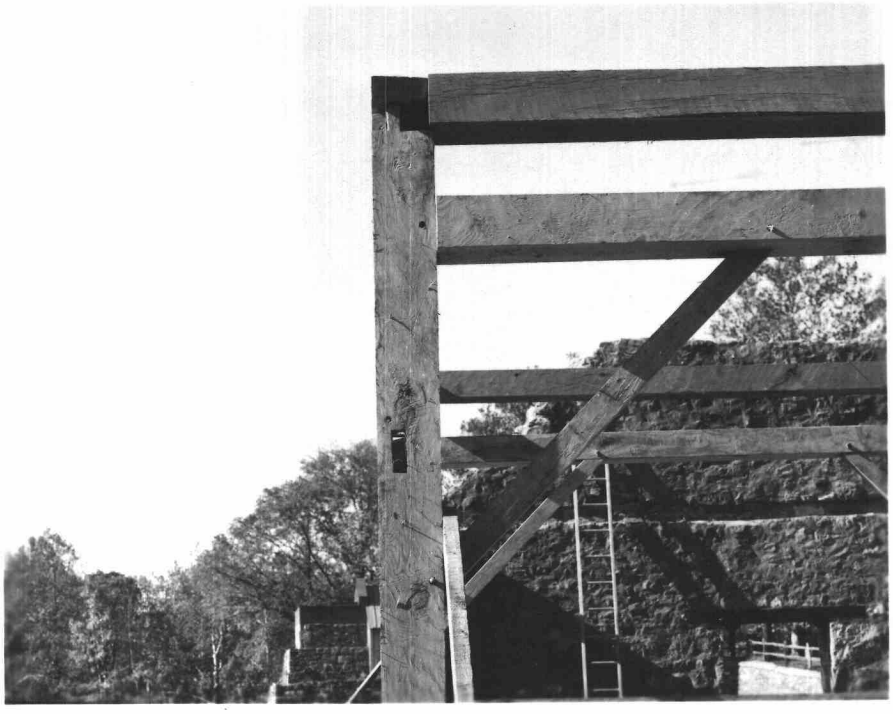

ILLUSTRATION NO. 28

The first two sections of framing in place.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-504

ILLUSTRATION NO. 29

The barn framing being started at the west end.

The rafters were erected as the framing progressed.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-513

ILLUSTRATION NO. 30

The raising of the last section of framing at the east end of the barn.

Photo: Robert D. Ronshaim, 1959
Copy neg. on file Hopewell NHS No. P1959-527

ILLUSTRATION NO. 31

Progress photo--The forebay siding and the shingling lath are being applied.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-531

ILLUSTRATION NO. 32

View of the barn from the north during the restoration process. Here the rafter placing is nearly complete and the shingling begun. The Amish carpenters are in the foreground.

Photo: Robert D. Ronsheim, 1959
Copy neg. on file Hopewell NHS No. P1959-532

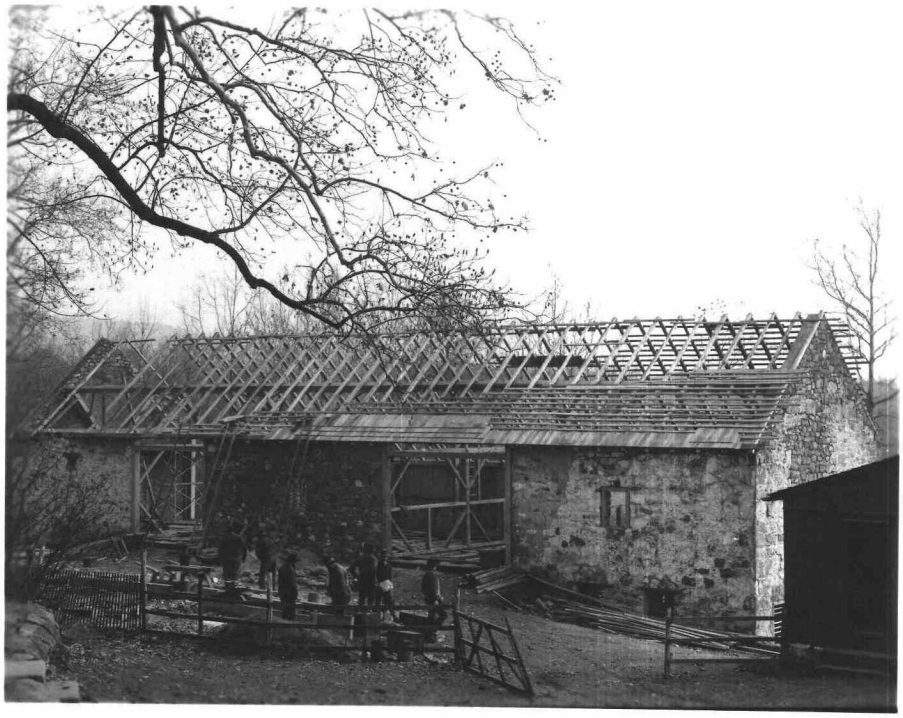

ILLUSTRATION NO. 33

Interior, mow level, looking east, showing the framing prior to the sheathing of the mow walls.

Photo: Jack E. Boucher, January 1960
Copy neg. no. HODC 880

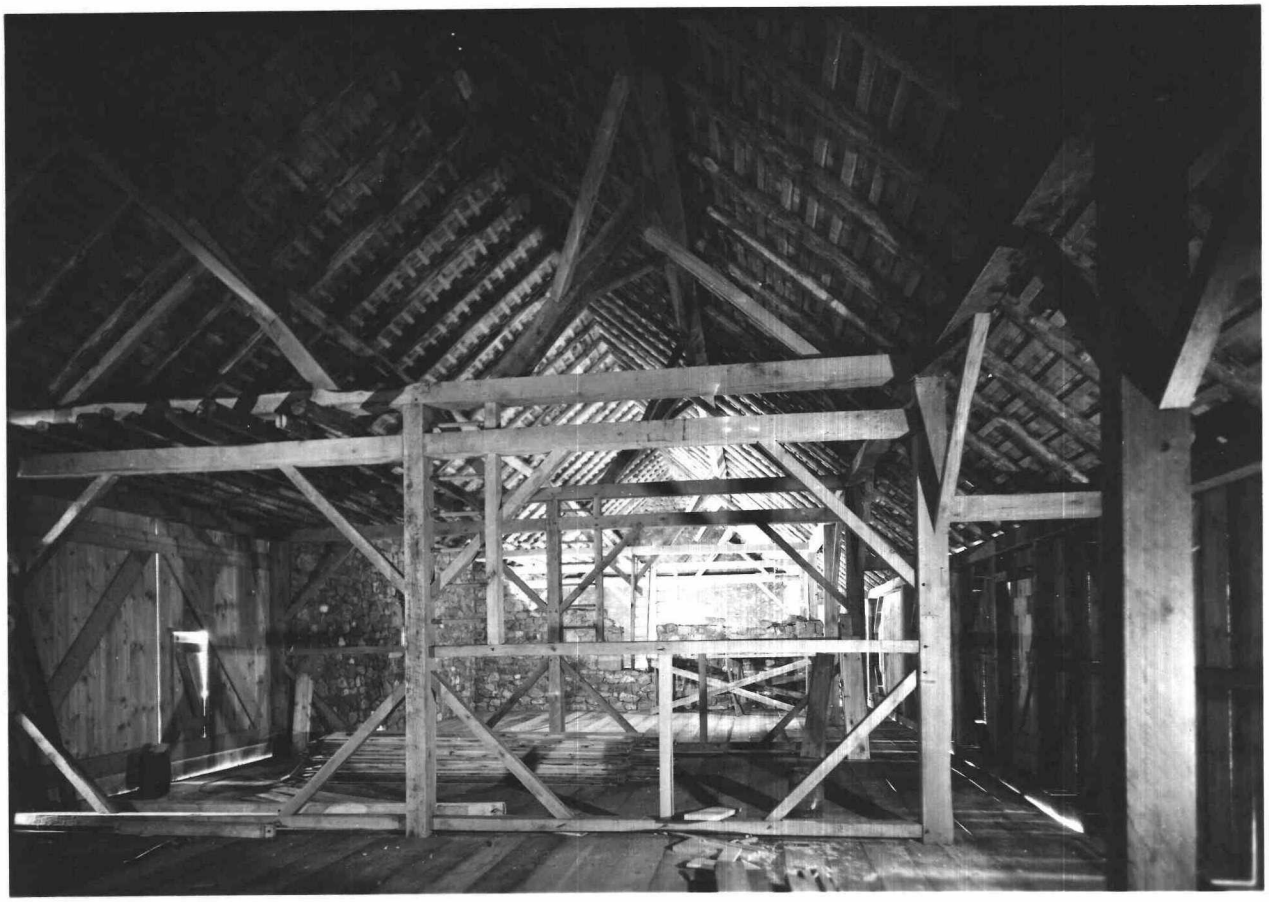

ILLUSTRATION NO. 34

Mow level, west end, showing roof framing, shingling completed and sub flooring in place. The enclosure at the left is the granary.

Photo: Jack E. Boucher, January 1960
Copy neg. no. HODC 879

ILLUSTRATION NO. 35

Detail of wood slide bolt on access doors within the large mow doors. Note the use of clinch nails in the door construction and the heads of the rivets used to apply the wrought iron hinges.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. EODC 1365

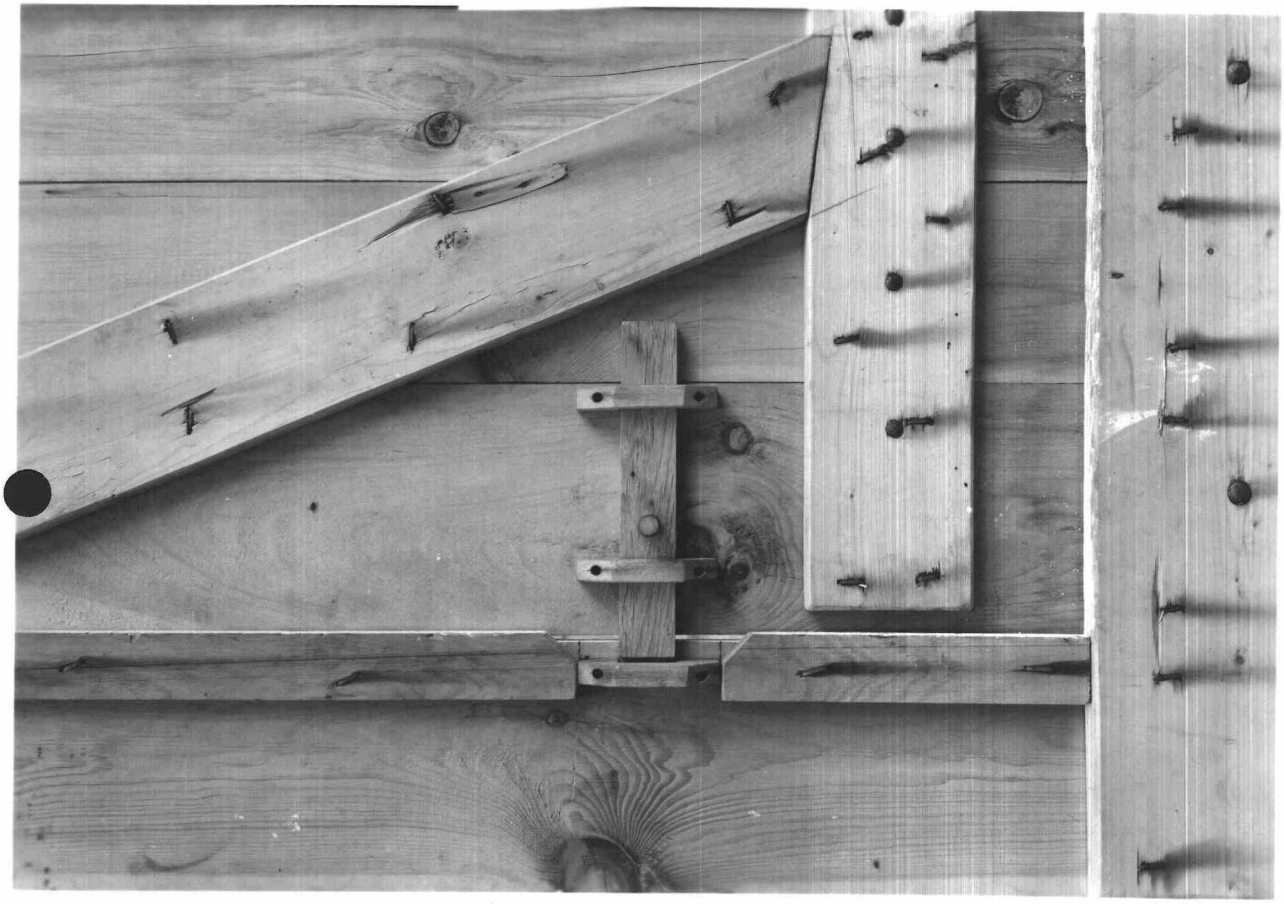

ILLUSTRATION NO. 36

The east granary. The granaries have been restored to smaller size due to the need for visitor circulation.

Photo: Jack E. Boucher, January 1960
Copy neg. no. HODC 877

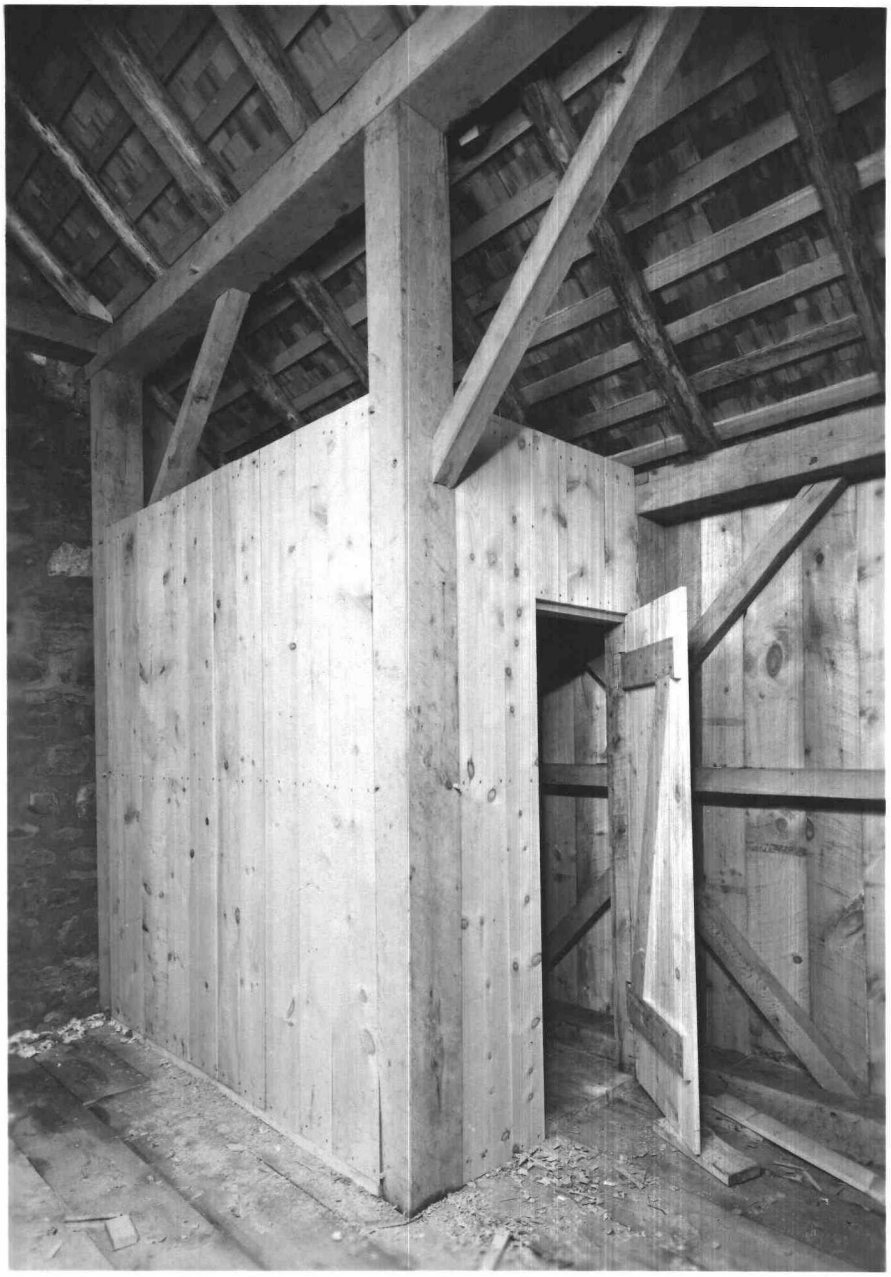

ILLUSTRATION NO. 37

The interior of the restored north stone wall and portion of the interior stone wall at the new level.

Photo: Jack E. Boucher, January 1960
Copy neg. no. HODC 378

ILLUSTRATION NO. 38

West wall, stable level, interior. The west doorway has been reopened and the original window openings restored.

Photo: Jack E. Boucher, January 1960
Copy neg. no. EODC 383

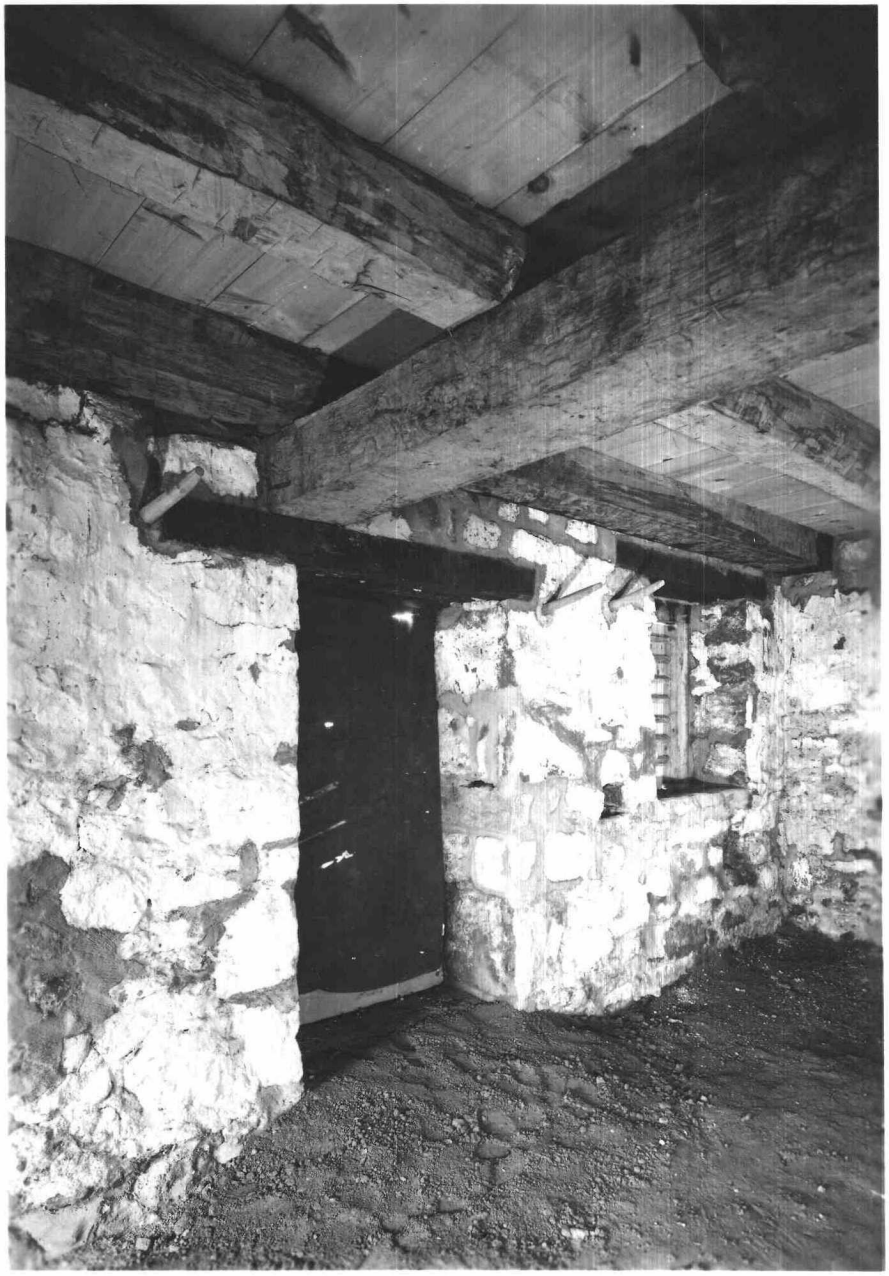

ILLUSTRATION NO. 39

Typical framing of the mow walls. The wood pegs mark the locations of the mortise and tenon joints.

Photo: Jack E. Boucher, January 1960
Copy neg. no. HODC 884

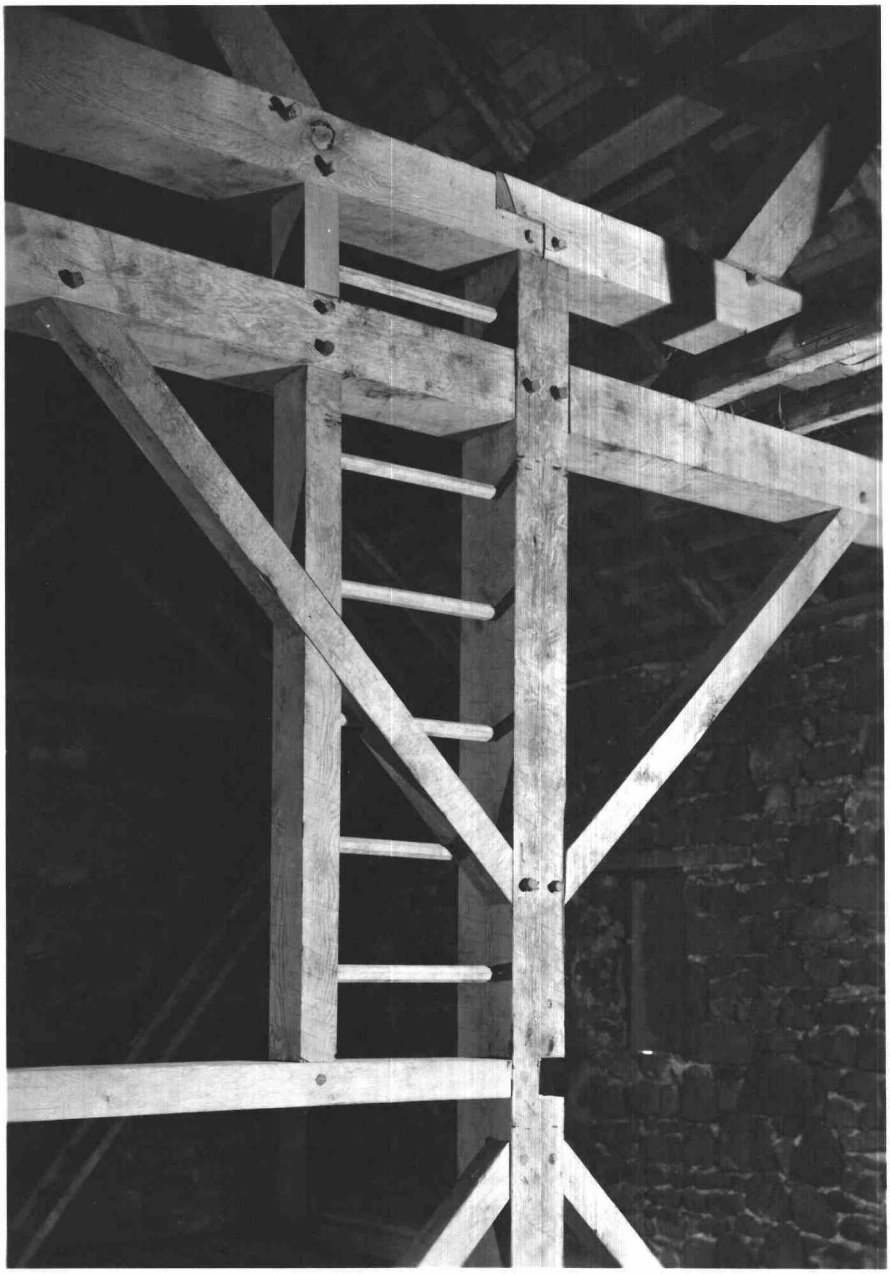

ILLUSTRATION NO. 40

Stable level framing showing the log joists, beam and manger ties in place.

Photo: Jack E. Boucher, January 1960
Copy neg. no. EODC 882

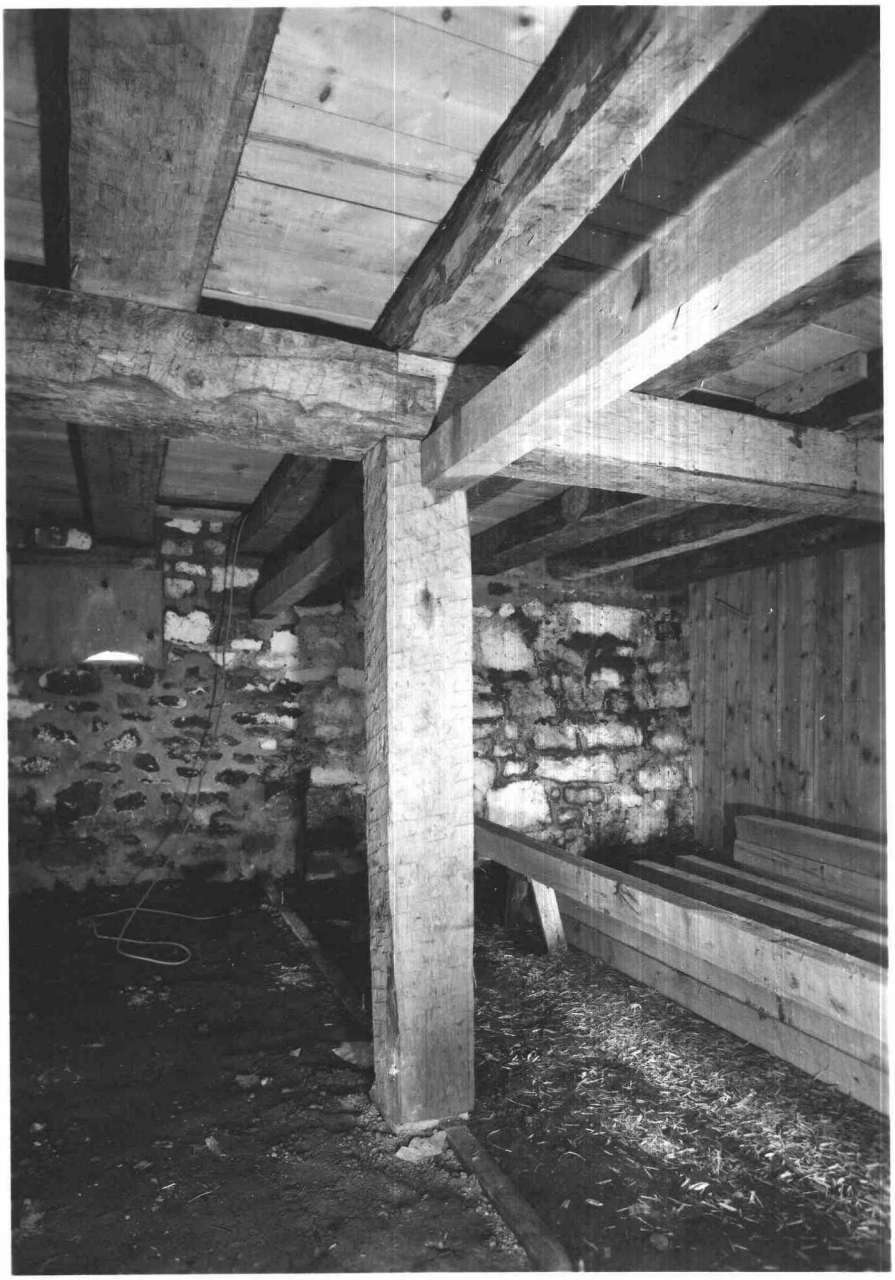

ILLUSTRATION NO. 41

The completed stalls in the stable level. The hay rack and feeding troughs are copies of those adapted from several early barns. The pole stall dividers were known to have been used at Hopewell and are movable. Later stall divisions were fixed.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. EODC 1366

ILLUSTRATION NO. 42

Mow level, west door, north wall. Threshing floor, or runway with the framing in place before the sheathing of the mow walls. The loosely laid, movable poles over the door is the traditional "overdem" for additional grain storage.

Photo: Jack E. Boucher, January 1960
Copy neg. no. EODC 885

ILLUSTRATION NO. 43

The north and east elevation before the completion of the barn and the regrading of the area.

Photo: Jack E. Boucher, January 1960
Copy neg. no. HCDC 874

ILLUSTRATION NO. 44

The southwest corner of the barn prior to the hanging of the stable doors.

Photo: Jack E. Boucher, January 1960
Copy neg. no. HODC 876

ILLUSTRATION NO. 45

The west end of the barn showing the regraded area between the Ironmaster's house and barn, and between the store shed (left) and the barn. The old west stable entrance has been restored. This was made possible by lowering the grade to its original level.

Photo: Robert D. Ronsheim, 1960
Copy neg. on file Hopewell NHS No. P1960-73

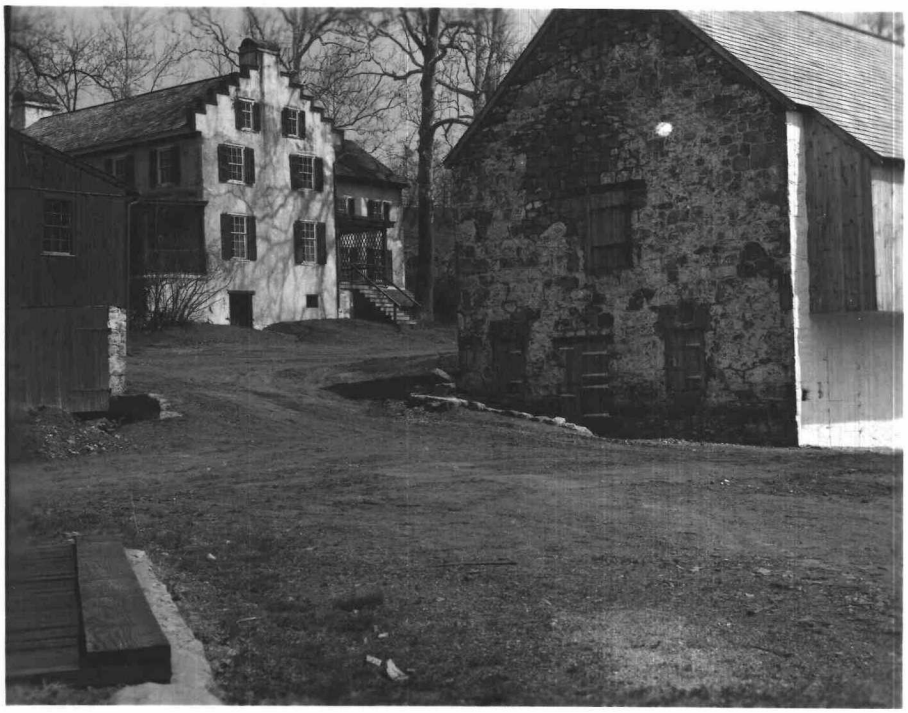

ILLUSTRATION NO. 46

East end of the barn after retaining walls were removed and the old grade was restored.

Photo: Robert D. Ronsheim, 1960
Copy neg. on file Hopewell NHS No. P1960-78

ILLUSTRATION NO. 47

East end of the barn after regrading. The stone retaining wall along the north wall of the barn and the north-south wall behind the drinking fountain have been removed.

Photo: Robert D. Ronsheim, 1960
Copy neg. on file Hopewell NHS No. P1960-62

ILLUSTRATION NO. 48

In connection with the regrading of the area at the north of the barn the stone walls around the sycamores at the rear of the house were removed and the former grade restored on the south side of the Ironmaster's house.

Since this photo was taken a flight of stone steps was built by the superintendent between the two trees to the kitchen areaway.

Photo: Robert D. Ronsheim, 1960
Copy neg. on file Hopewell NHS No. P1960-60

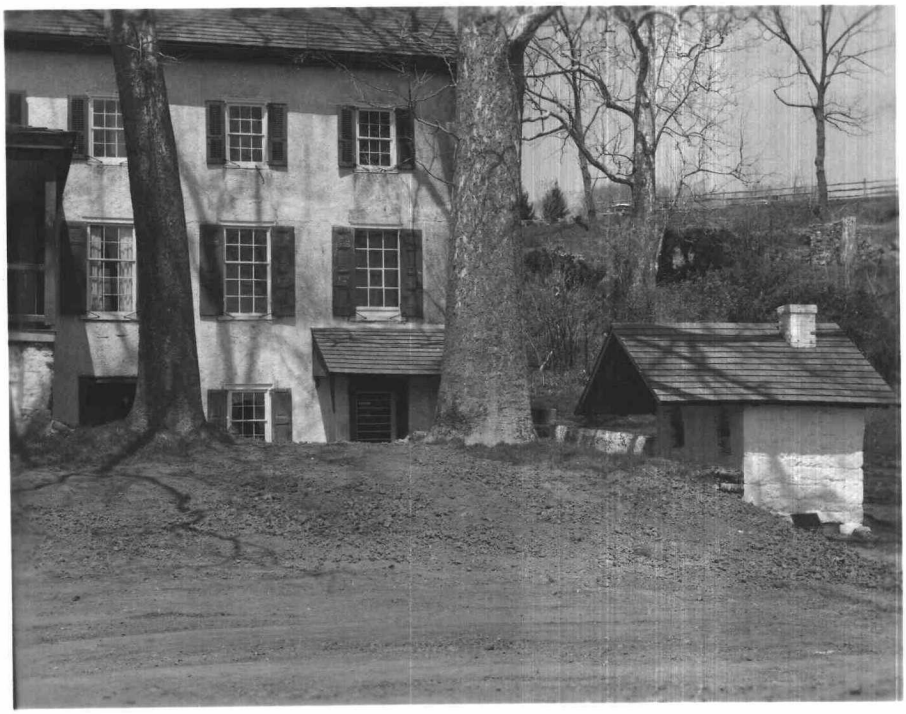

ILLUSTRATION NO. 49

The south and west elevations of the completed barn restoration.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. EODC 1372

ILLUSTRATION NO. 50

The east and north elevations of the completed barn. The regrading has been completed and the stone drinking fountain in the left foreground retained for the convenience of the visitors.

Photo: Ned and Lila Goode, August 1960
Copy neg. no. EODC 1371