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architectural data section

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ANTIETAM NATIONAL BATTLEFIELD

THE PIPER BARN



MARYLAND

ANTIETAM NATIONAL BATTLEFIELD
HISTORIC STRUCTURE REPORT
ARCHITECTURAL DATA SECTION

THE PIPER BARN

by
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U.S. Department of the Interior/National Park Service

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INTRODUCTION

The Piper Barn Historic Structure Report was prepared at the Williamsport Training Center (WTC), National Capital Team (TNC), Denver Service Center (DSC), National Park Service. Trainees of the center were responsible for the various aspects of the report. The measured drawing survey to record the existing conditions of the barn was conducted by Robert Hartman, mason; Michael Lee, carpenter; Francis Lucas, carpenter; John Marsh, architect; and Jerry Shaffer, mason. Further investigation of the historic fabric was conducted by George Siekkinen Jr., architect, as part of an individual development program at WTC.

Supervision was provided by James Askins, Branch Chief, WTC. The report was prepared for Charles F. Bohannon, chief, Branch of Cultural Resources, TNC.; Richard Huber, assistant manager, TNC, was overall supervisor.

Typing of drafts was done by Kim Grim and Robert Hinson, WTC. Review draft typing was done by John Tyler, TNC. Final typing was done by Pamela Kautzman, TNC. Karen Sporn, TNC, served as editor. Technical assistance was provided by Anthony Donald, Thomas Fields, and Michael Wilderman, TNC. Assistance in the archival research was provided by Betty Otto, Antietam National Battlefield, and John Frye, Washington County.

ADMINISTRATIVE DATA

a. Name: Piper Barn
Number: 12
Location: 660 feet east of Hagerstown Pike, Maryland State Route #65, on north side of Piper Lane.
Management Category: 11b
Proposed Treatment: Stabilization (alternative 1).
Restoration (alternative 2).

b. Proposed use:

(i) Use by permittee farmer for agricultural purposes; i.e., storage of hay, corn, and farm machinery, and shelter for beef cattle.

(ii) Use by park staff for storage of park related materials and equipment.

c. Identification of the planning document prescribing the proposed treatment and use:

i) NPS List of Classified Structures, no. 3120-12.

ii) Development/Study Package Proposal, "Stabilize Piper Barn," 5/10/78.

iii) Piper Barn at Antietam National Battlefield Site, Package #215 -- Task Directive, May 23, 1979.

d. Justification of the proposed treatment:
Alternative 1: Stabilization

i) Alternative 1, which calls for the stabilization of the Piper Barn, is primarily a preservation treatment. A preservation treatment

> . . . involves the application of measures to sustain the existing terrain and vegetative cover of a site and the existing form, integrity, and material of an object or structure. It includes initial stabilization work, where necessary, as well as ongoing maintenance.[1]

The change of the roof covering from the existing corrugated metal sheets to the traditional material of standing seam metal roof which existed previously is the major item of the work which would be characterized as being a restoration treatment.

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1. National Park Service, Management Policies, Washington, 1978, p. V-13.

ii) Alternative 2 is characterized as being primarily a restoration treatment. Such a treatment

> . . . is the process of recovering the general historic appearance of a site or the form and detail of an object or structure by the removal of incompatible natural or human caused accretions and the replacement of missing elements as appropriate. For structures, restoration may be for exteriors and interiors and may be partial or complete.[2]

Alternative 2 calls for the demolition of the addition 3 which was built in 1914. With the demolition of addition 3, the north stone gable wall of the barn would be visible again from the observation tower on Sunken Road.

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2. Ibid.

THE SIGNIFICANCE OF THE PIPER BARN

The significance of the Piper Barn primarily arises from its location on the field of the Battle of Antietam. An accident of history placed it and the other buildings of the Piper farmstead at a strategic point in the midday phase of the battle. The barn thus stands as part of an historic scene of national significance.

Within the historic scene of the battle, the barn derives secondary significance from its distinctive physical character and its great size. Park visitors traversing the surrounding roads view the barn at the bottom of a shallow pastoral valley, which it dominates. It is the largest structure within sight in any direction.

The barn possesses significance for the interpretations of local history which comes from understanding its image and form. By reading the barn's message one may see the cultural origin of the early settlers as builders. Further, one may see the physical changes made to the barn in response to evolving agricultural technology.

This statement of significance discusses the several aspects presented above. Through study of the barn one recognizes that the barn has a complexity of form and history. The barn functions as a background building within the historic scene. The pastoral landscape, which is the historic scene for the battle, has a history which began before and continued after the battle. This history, then, is a local prologue and epilogue to the story of the Battle of Antietam. The barn represents an aspect of this more extended story.

The Piper farmstead occupied a position which figured importantly during the midday phase of the Battle of Antietam. In Francis F. Wilshin's Historic Structures Report, History Data, Antietam National Battlefield Site, the importance of the Piper farmstead is indicated in the contemporary reports made by several officers to their superiors after the battle. Union Army Brigadier General Hancock referred to it as "The citadel of the enemy at their position of the line. . . "[3]

In addition to this strategic role, the barn seems to have been a place where medical aid was provided during the battle according to the following passage by Confederate Brigadier General R. W. Rodes:

> . . . . Just as I was moving on after Lightfoot, I heard a shot strike Lieutenant Birney, who was immediately behind

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3. Brig. General Winfield S. Hancock, U.S.A., "Report No. 39" War of the Rebellion, Official Record, Series 1, Vol. XIX, Part 1, Washington: Government Printing Officer, 1887, p. 278. (Hereafter cited at O.R.)

> Wheeling. I found him falling and found that he had been struck in the face. He found that he could walk after I raised him, though he thought a shot or piece of shell had penetrated his head just under the eye. I followed him a few paces, and watched him until he had reached a barn a short distance to the rear, where he first encountered someone to help him in case he needed it.[4]

After the battle it does not appear that the barn had any military function. An examination of the U.S. Sanitary Commission's map of field hospitals that were in service after the battle was made. This map does not indicate that the Piper Barn or that any other building of the Piper farmstead was used as a field hospital after this battle. The Piper farmstead is depicted on this map but there are no symbols adjacent to it to indicate its use as a field hospital. This appears to be rather unusual given the fact that most of the surrounding farmsteads were used as field hospitals after the battle.[5]

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4. Brig. General R.E. Rodes, C.S.A., "Report," O.R., p. 1038.

5. Dr. E. Harris, Sanitary Commission, U.S. Engineers, Map of the Battle of the Antietam.

CHARACTER OF THE BARN AND ITS SETTING

The barn's size, character, and setting contribute to its significance as a part of the historic scene. The barn is observed by park visitors moving along Hagerstown Pike and Bloody Lane, or standing at the Observation Tower.

The setting at the time of the battle was that of an agricultural landscape of planted and plowed field, orchards, pastures, and scattered woodlots. A map based on the records and data of the Antietam Battlefield Commission indicates the pattern of use of the fields surrounding the farmstead.[6] Comparing this map with a panoramic photograph of the landscape circa 1896-1906, and with the views observed today, one finds a great degree of continuity (figures 3,4). While there have been changes, such as the loss of the Piper orchard, the growth of new trees, and the construction of a number of ranch style houses along the Hagerstown Pike, the historic scene still retains to a great degree the visual character of the time of the battle.

In this setting, the barn stands in a small shallow valley with the other farmstead buildings. From the surrounding roads, the barn alternates being in view or being hidden by a rise of ground or trees. At more than 144 feet long, 44 feet wide, and 43 feet high, the barn is the largest structure within sight in any direction. This great size, itself, makes the barn a visual landmark for the historic scene.

In viewing the barn, one sees a large utilitarian structure constructed of stone and wood. It is devoid of decorative features other than the roof ridge ventilators. This functional character reinforces the barn's role in the historic scene. The battle was fought in the midst of a working agricultural community on the cultivated fields and using the farmstead for strategic and shelter purposes.

Another aspect of the significance of the barn and its setting involves the cultural interpretations which may be gained from an understanding of its complex form. Sanderson, in his report, Piper Farm Historical Record Report, mentions that the early settlers of Washington County, Maryland came from Pennsylvania and New York in the 1720s and were of German, Scotch-Irish, and Dutch descent.[7]

This settlement pattern is revealed in the original barn which is recognized as being an example of a "Pennsylvania bank barn." Arthur and Witney in their study note:

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6. James D. Bowlby, Site of the Battle of Antietam Creek or Sharpsburg, Maryland, Washington: Parks and History Association, Inc., 1972.

7. John Sanderson, Piper Farm Historical Research Report, Sharpsburg, Maryland: National Park Service, 1973, p.1.

> The forebay is the characteristic feature of the banked barn and is formed by the extension of the mow floor as a cantilever on which rests the south part of the mow.[8]

The additions and alterations to the original Pennsylvania bank barn were made in response to changing agricultural technology and practices. Sanderson indicates that at the beginning the farm operated as a "general farm" by producing a variety of crops and animals.[9] The changes to the barn accommodated larger volumes of crops, such as apples, corn, and wheat. Larger draft houses and later steam engines with their attachments also required changes to the barn's fabric and form.

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8. Eric Arthur, Dudley Witney, The Barn, New York: A & W Visual Library, 1972, p. 106.

9. Sanderson, p. 2.

PHASES OF THE HISTORIC DEVELOPMENT OF THE PIPER BARN

PHASE	HISTORIC DEVELOPMENT	DATE/PERIOD
PHASE 1	Construction of original barn	ca. 1800-1845 as "Pennsylvania Bank Barn"
PHASE 2	Construction of Addition 1	Before 1880; possibly before 1862
PHASE 3	Construction of Addition 2 in its original, smaller form	Before 1880
PHASE 4	Alteration and expansion of Addition 2 to its present form	Before 1896 - 1906; possibly before 1880
PHASE 5	Addition of dormer to barn and construction of cistern 1	ca. 1896-1914
PHASE 6	Construction of Addition 3, cistern 2, and installation of roof ventilators	ca. 1914
PHASE 7	Alteration of roofline and expansion of Addition 1	ca. 1929
PHASE 8	Structural collapse of Addition 1 and deterioration of stone walkway	current

DESCRIPTION OF HISTORIC DEVELOPMENT AND APPEARANCE

The Piper Barn has had a number of different appearances over time as a result of additions and alterations to the original structure. To present this historic development of the barn, a series of drawings have been prepared which depict the barn in its several different appearances. The historic development series is based on physical evidence, the archeological report, and several historic photographs plus a degree of speculation.

In considering the historic development of the barn there are a number of questions which present themselves. These include:

1. When was the original barn built;

2. When were the several additions and alterations constructed;

3. What was the appearance of the barn on September 17, 1862;

4. What are the dates and periods of time for the different phases of the barn's historic development; and,

5. How has the barn's appearance changed in response to changing agricultural technology and practices?

To answer these questions has proved to be difficult. Information was drawn from the archeological, architectural, and historical investigations. Although a great amount of information was generated by these three investigations, the specific information to fully answer the first four questions is lacking. For the last question, the physical evidence of the barn provided some answers.

The result is that the historic development series must be considered hypothetical. This caution applies to the images which are presented and to the dates or periods which are associated with those images. The series is not presented without any basis but the information derived from the archives, photographs, and physical evidence is insufficient to make statements with great certainty.

The reasons for this lack of certainty are several and arise from the essential character of the barn itself. As an example of a rural, vernacular structure built to serve a utilitarian purpose, the barn does not possess the formal architectural stylistic characteristics and design motifs which would indicate an architectural stylistic phase, and thus a period of time. Further, the barn is not the type of structure which would figure prominently in graphic, photographic, or written records as compared to a house, church, store, public building, or mill. Even when considering the barn's strategic location during the battle, its existence, but not appearance, is only briefly mentioned in the reports made by the various officers.

PHASE 1: THE ORIGINAL BARN

The original barn was built in the tradition of a "Pennsylvania Bank Barn". The salient characteristics of this type of structure are discussed by Glassie. In a bank barn:

> (t)he cattle are stabled in the basement of the Pennsylvania barn and the upper level, used for hay and grain storage, is cantilevered over the lower on the barnyard side. This overhang, which generally faces the south, east, or some compass point between, is called an "overshoot", "foreshoot", or "forebay", "--der forshoos or der forbau" in the Pennsylvania Dutch dialect. The barn is built into a bank or has a ramp - "barn hill" - or bridge built up to the side opposite the forebay, so that a vehicle can be drawn onto the floor of the second level. It is built of stone or brick, log or frame with a stone basement.[10]

The appearance of the Piper Barn in the first phase is described below:

Site: East - southeast facing slope with outcropping of rocks.

Plan: 38 feet wide X 85 feet long rectangular first story; second story is 44 feet wide.

Section: The second floor overhangs the first story, forming a forebay which faces to the east; the height of the barn from first floor to roof ridge is more than 43 feet.

Structures: The first story has six heavy timber bents which support the second story floor structure; these bents run east to west and are irregularly spaced along the north-south axis; at the second story three bents support the roof structure; these bents are evenly spaced, dividing the second story into four equal bays.

Materials: The first story walls, the north and south gable walls, and the first and fourth bays of the second story west wall are all constructed of coarse field stone rubble; the forebay wall is a wood structure covered by vertical board siding.

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10. Henry Glassie, Pattern in the Material Folk Culture of the Eastern United States, Philadelphia: University of Pennsylvania Press, 1968, p. 55.

Use: The first story was used to shelter and feed the farm animals; the second story was used for the storage of hay in the far north and south bays; grain was threshed in the central two bays; the threshed grain was stored in a granary built in the east end of the north bay.

Historic Documentation

There are no visual documents in the form of photographs or drawings which depict the barn in this first phase of its historic development. Further, in the two historic research reports prepared by Francis F. Wilshin and John Sanderson, the data which they were able to find is insufficient to assign a date or period to the construction of the original barn with a degree of certainty.

The chain of title presented in Wilshin's report indicates that the earliest legal record was the land patent to John Elwick in 1742.[11] The farm was owned successively by several families, including the John Miller family.[12] Jacob Miller sold the farm, which comprised 156 acres, to Daniel Piper for $9,600 in 1845.[13] It is presumed that the barn existed at the time of the sale, given the amount of the transaction and the acreage involved. This presumption, though, is not founded on a comparative analysis of farm sale prices.

Given this dearth of information on the Piper Barn itself, comparative studies with similar buildings on other farmsteads in the vicinity were undertaken. The Maryland Historic Sites Inventory, an extensive inventory of historic buildings in terms of the numbers of buildings surveyed, had been conducted for the Maryland Historical Trust and the Washington County Planning Commission. The inventory forms for farmsteads in the vicinity did not provide much substantive information. One nearby barn, though, which resembles the Piper Barn, was surveyed. This barn is located on a farmstead on Tommytown Road. Stoner indicates that the Tommystown farmstead buildings appear to date from the first quarter of the 19th century.[14]

Thus, regarding the Piper Barn it may be said that it was constructed sometime after 1742 and probably was standing by 1845, with a construction period in the first quarter of the 19th century being an educated guess. To speculate further on the period would be unfounded, based on the documentary and comparative evidence available at this time.

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11. Francis F. Wilshin, Historic Structures Report, History Data, Antietam National Battlefield Site, Washington: National Park Service, 1967, p. 131.
12. Ibid.
13. Ibid.
14. Paula Stoner, "WA-11-404" file, Maryland Historic Sites Inventory, Hagerstown: Washington County Planning Commission.

Use of the Original Barn

The barn was built to serve the operation of the farm, and Sanderson states that " . . . this farm was operated as a general farm, that is, various field crops and garden produce and pasturage were produced on the farm."[15] The first story of the barn was used to shelter the farm animals, including draft horses and dairy cattle. Features which indicate these uses remain partially and in cases entirely intact. A discussion of the areas of the first floor and their features follows.

Bay 1001

This bay at the far south end of the first story of the original barn sheltered the farm's draft horses (figure 9). The bay is 15 feet wide from the south stone wall to the first bent, and 31 feet long from east to west. In the south corner of the east wall, a 3 foot, 1 inch wide Dutch door provides access to the barnyard. The doorway was 6 feet, 4 inches high, but the height was later increased by about 10 inches by cutting into the raised stone sill. This was done to accommodate larger draft horses (figure 10). An iron bar was installed on the inside of the door frame at mid-height. It can be swung up and held on an eyelet with a peg. This 1-5/8 inch wide by 1/2 inch thick bar enabled the farmer to provide the horses maximum ventilation, while still restraining them from wandering into the barnyard. Additional light and air is provided by the series of ventilators built into the stone walls. These ventilators are about 2 feet, 7 inches wide and 3 feet, 6 inches tall. A wooden frame holding square pegs fills each opening.

The horses stood facing north toward the bent structure, which holds the grain trough and hay rack. Separating the horses from one another were a series of partitions. The archeological investigation revealed a series of post holes in the ground, which were the bases for the partition posts.[16]

In the ceiling, six sets of drilled holes align perpendicular to the grain trough and were used to hold the tops of the partition posts.

Behind the horses along the south wall, their heavy leather tacks were hung from wooden pegs. Two support systems are observed. For the first, boards with drilled holes were embedded in the stone wall. For the second system, boards with drilled holes were suspended from the ceiling by secondary boards.

A small niche was built into the southeast corner of the stone wall. While its use is not readily apparent, it was presumably used to keep small objects safe from the horses, i.e., medicines (figure 11).

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15. Sanderson, p. 2.
16. Ellen M. Seidel, Archeological Data Section, Historical Structure Report, Piper Barn, Antietam National Battlefield, Sharpsburg, Maryland, National Capital Team, Denver Service Center, National Park Service, 1982, p. 34.

Bay 1002

The 7-1/2 feet between the first and second bents were used as a feeding aisle. The grain troughs and hay racks are supported on the bents and are accessible from the aisle. An iron hook is embedded in the lintel of the bay door. This iron hook was a safe place to hold a lantern. The aisle was formerly covered by a wooded floor, which has decayed. At the western end of the aisle, a step ladder provides access to the upper story through a hole. Hay was thrown down to the feeding aisle through this hole.

Bay 1003

This bay is about 13 feet wide between the second and third bents. This bay was probably subdivided into a series of box stalls. These stalls were used to keep pregnant mares and mares with their foals. The existence of the box stalls is indicated by iron pintles, which are found embedded in the two middle columns of the third bent. These pintles formerly supported doors or gates on hinges. The archeological investigation also revealed a post which ". . . may have been a partition support for the box stalls in this area of the barn."[17]

From the second bent, grain troughs and hay racks hang facing north. A horizontal board partition covers the third bent. Adjacent to the door, a peg board for tack storage runs from the east wall to the first column of the third bent.

Bay 1004

The use of this 11 foot wide bay is not specifically clear but was presumably used for the farm's cattle. Several features of interest observed give some ideas of the use of the space. A peg board is found next to the door fastened to the columns of the third bent (figure 12). This peg board was fashioned to hold relatively light weight objects which were relatively small in width. The pegs which remain are 3/4 inch across, extend outward for 4 inches and are placed 7-1/4 inches on center. The brackets which hold the peg board are held by square headed nails.

Below the pegboard, on top of the bent's sill, a small feed trough runs between the bent posts. The vertical saw marks on the trough's large facing board would indicate an early date for its installation. This evidence, though, is counterbalanced by the fact that wire nails are used to attach it, thus indicating a later date for the alteration. The reuse of older materials in a later alteration was and is a common rural practice and may explain this situation. This trough system apparently extended along between the other posts as the sill has tongue and grooved boards nailed to its top, forming a smooth surface over its entire length.

In the ceiling boards between the fourth bent and the adjacent floor beam, a series of holes had been drilled. These holes are 1 foot 8

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17. Seidel. p. 35.

inches south of the bent, 1-1/2 inches in diameter, and 4 feet 5 inches, to 4 feet 10 inches apart along an east-west line. Some of the holes are filled with round pegs. A second system of marks is also observed in the ceiling. In the second floor beam south of the fourth bent, notches were cut from 3-1/4 inches to 4-1/4 inches in width. These notches align themselves with the posts in the bent. The remnants of the nails in the notches are cut nails.

The presumed function of this space would have been for milking cows. The cows would be separated from one another by a series of partitions, which are indicated by the notches aligned with the bent posts. The round holes were to support stanchions which would have held each cow in her stall while being milked. The empty milk pails were kept on the peg board behind the cows near the barnyard door.

Bay 1005

This 11 foot wide bay runs between the fourth and fifth bents. It was and continues to be used as a feeding pen for the cattle. Running continuously from east to west walls, grain troughs and hay racks are supported on the fifth bent. Incorporated into the horizontal board partition wall, which covers the north side of the fourth bent, is a shallow storage box which protrudes into the space of bay 1004. It is immediately to the east of the fourth bent post, which supports the east girder.

Longitudinal Aisle An aisle formerly connected the first six bays. It ran along the west stone wall and cut through the intervening bents. The sills stopped short of it and posts defined its width. It was presumably set off from the bays through which it passed by partition walls. The archeological investigation did not reveal a permanent footing for such a feeding aisle which may have been built on a less permanent footing.[18]

Bay 1006

This is a feeding aisle, 6 feet in width, which is entered through a Dutch door. The grain troughs and hay racks of bays 1005 and 1007 are accessible from this aisle. At its west end, a ladder up through a hay hole provides access to the upper story.

Bay 1007

This bay was and is used as a feeding pen. The sixth bent on the south side holds the grain trough and hay racks. This bay was formerly an end bay with ventilator openings built in the north and west stone walls.

Structural alterations are observed in the ceiling of this bay. The second story floor structure was altered at some point to accommodate the granary, which was constructed in the northeast corner. Additional beams were inserted between the original beams to bear the

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18. Seidel, p. 31.

additional weight of the grain. These additional beams are logs which have only been partially finished and still exhibit bark (figure 13). These beams are clearly visible from bay 1007.

Second Story of the Original Barn

The second story was used to thresh and store grain and to store hay and straw for the animals in the story below. The second story is one large space divided into four equal bays by three bents.

The two pairs of large doors in the west elevation provide access to the center two bays from the barn bank. Through these doors, wagons of field crops were brought in for storage.

Bay 2001

This far south bay was and is used for hay storage. Its flooring is an impermanent arrangement of loose boards laid over the underlying floor structure. Upon this structure loose hay was spread for winter feeding.

Bays 2002-2003

The center two bays were used for wagon access and grain threshing. These two bays are floored with random width planks, 2 inches thick. A series of low partitions 4 feet in height formerly ran at the bottom of each bent structure and thus separated these bays from one another. These partitions would have served the grain threshing process by keeping the threshed grain confined to one bay or another (figures 14, 15).

Bay 2004

The far north bay was and is also used to store hay. Its flooring system is a similar arrangement to the one found in bay 2001. In the east end, a granary was constructed to store the threshed grain. It is a low, tightly built structure and bears on the area of reinforced beams mentioned in the discussion of bay 1007 (figures 16, 17).

PHASE 2: ADDITION 1

Some time prior to 1880, the first addition to the barn was built onto the west wall at the south end. This addition incorporated the south bank wall as its north wall. An "L" shaped stone wall was constructed to form the remainder of the 22 foot by 16-1/2 foot ground story. The coursed rubble wall stops short of the southwest corner of the original barn, thus forming a doorway into this space.

The upper story of addition 1 has been altered since its initial construction, leaving only portions of the original structure intact. The evidence which remains would indicate that it had been a shed roofed wooden structure, with the roof plane being a continuation of the barn's roof plane.

This roof configuration is indicated by several observations: 1) a series of notches were cut into the original barn's rafter plate adjacent to the addition in order to receive, presumably, the addition's rafters and 2) the north and south upper story walls both retain elements of the earlier structural system of posts and wall girts (figures 20-23). The roof pitch indicated by these elements is much steeper than the present roof had been prior to its decay and this original roof pitch appears to have matched the barn's roof pitch.

The wall structure of the upper story appears to have been a combination of a lower section of hewn logs and an upper section of posts and girts. Several courses of hewn logs were laid on top of the stone walls and joined by "V" notching. A wide board laid on top of the logs formed a plate for the posts. Vertical board siding, now badly deteriorated, covers the exterior of both the lower courses of logs and the upper wooden framework.

Openings to the upper story were provided in the north and south walls. A doorway was over the ground story doorway on the south wall. Ground level access from the barn bank on the north side was through a second doorway. The dimensions of the north doorway were probably about 3 feet 9 inches across and 5 feet 11-1/2 inches tall. The northeast post still retains a pintle from this now vanished door. The appearance of the barn with addition 1 is depicted as Phase 2 of the historic development series.

History and Use

The documentation to support an estimate of the date of construction for addition 1 is nonextant. There is inferential evidence which would indicate that it may have been built prior to 1862. This statement is based on the presumed use of addition 1 as a fruit crating shed and on the fact that the Piper farm in 1862 had an extensive orchard. Such a large orchard of about 14 acres would have presumably required a specialized facility for the handling of the annual crop. How the upper and lower stories would have been specifically used has not been determined.

Further evidence that addition 1 may have existed in 1862 is indicated in the map by the Antietam Battlefield Board. These maps, which were included in Wilshin's report, depict the conditions of the field of battle with topographic features, use of the fields, roads, lanes, fences, and outline plans of buildings. The Piper Barn is distinctly drawn with an addition at the southwest corner in the present location of addition 1.[19] There are questions regarding the map and its preparation. Specifically it is unknown if the data used to draw the buildings was taken from the time of the battle or at the time of the map's drafting in the 1890s (figure 1).

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19. Wilshin, p. 233

PHASES 3 AND 4: ADDITION 2

Adjacent to the south gable of the original barn, the second addition, which is a combination corn crib and wagon shed, was constructed (figure 24). Its present appearance is different from what is presumed to have been its first appearance, which is depicted in phase 3 of the historic development series.

Two components compose addition 2. The first is a corncrib, set on stone piers at a distance from the barn gable wall. A wagon shed is the second component and it spans the distance from the corncrib to its bent standing against the barn gable wall on stone piers.

Historic Documentation

The historic documentation discovered during the archival research is limited in its scope relative to the historic development of addition 2. The two historic photogaphs which were found both depict addition 2 in the form and appearance which it has at the present.

The first photograph is believed to date from around 1880. It was taken from a point to the southeast of the barn. In the foreground there is a small and now vanished pond. In the middleground, the farm lane crosses diagonally across the photograph. In the background, the barn with addition 2 appears as in phase 4 (figure 2).

The second photograph is from the period 1896 to 1906 and was taken from the observation tower, which was built adjacent to Bloody Lane in 1896. The photograph is a long-distance panoramic view and the barn with addition 2 appears as in phase 4 (figure 3).

The Antietam Battlefield Board maps do not indicate the existence of addition 2 in a manner similar to the depiction of addition 1 on these same maps.[20] The cautions expressed earlier regarding these maps continue to hold. There is uncertainty as to the time frame for the data and its accuracy as presented in the board maps (figure 1).

Historic Development

Given the historic documentation discovered and the information gained, the historic development of addition 2 is presented with a degree of speculation. Physical evidence observation indicates alterations in the spatial relationships between the two components: 1) the corncrib and 2) the gable bent. Further, there is the indication of additions to the components after the initial construction.

The observations which have been made include:

1) The bent structure has been moved in relationship to the corn crib westward by 4 feet and upward by 1-1/2 feet (figure 26).

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20. Wilshin, p. 233.

2) The rafters spanning from bent to corn crib required extensions and an intermediate support due to an increase in the width of the wagon shed (figure 27).

3) The corn crib has been lengthened by an addition of about 12 feet on its west end (figure 28).

4) A pent roof supported on brackets was added to the east end between the barn forebay and corncrib.

Use of Addition 2

The use of addition 2 as a corncrib and wagon shed is readily apparent from its appearance. The reasons for its addition and enlargement are less readily clear. It is presumed that the increased height of the wagon shed was a result of needing more clearance around the farm equipment brought into the space. The addition to the corn crib provided additional storage capacity.

The remains of a hoisting apparatus are in the wagon shed. It is fashioned of debarked logs into which holes had been drilled. These logs are mounted to turn on cylinders. There are two logs on the bent sill and two logs set perpendicular to the sill logs mounted on the tie beams. The specific operation of this apparatus has not been studied (figures 29, 30).

PHASE 5. DORMER ADDITION AND CISTERN

To the original barn's east elevation, a dormer was added to the third bay from the south. It is in the form of a gable roofed wall dormer with a large awning opening above the line of the barn eaves. Below it, the forebay wall was altered to accommodate a pair of double doors which open out from the floor over the barnyard. The evidence of the alteration and addition is observed in forebay posts and girts in the vicinity. Several of these members have been cut and shortened in order to accommodate the new doors and the dormer.

Related to the addition of the dormer was the construction of the cistern beyond the west wall of the barn. The cistern was built 5 feet west of the barn stone wall and 9-1/2 feet north of the barn doors. It is a masonry vault 16 feet long by 10 feet wide. The archeological investigation revealed the method of its construction whereby a pit was dug, an outer layer of rough stones laid down, and an inner vault of brick and mortar built.[21] The dirt removed from the pit was distributed around it (figure 31).

The results of the cistern construction were several:

1) The ventilator to bay 1006 was filled with a masonry and mortar patch.

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21. Wilshin, P. 121.

2) A light well was built around the west wall ventilator of bay 1007 in order to maintain its function.

3) The excess dirt raised the layer of the ground on the north gable wall.

Documentation:

There have been no photographs found which depict the original barn immediately after these features were completed. The drawing for phase 5 of the historic development series is another speculative drawing. The physical evidence observed at the barn is the basis for this phase. Its period would have been after the previous phase, the period, 1896-1906, and before the next phase in 1914.

Use

The dormer and cistern were needed to accommodate the use of steam threshing machinery. The steam powered engine would have been driven to the barn bank and secured. The cistern provided for its water supply. The large barn doors would have been held open to allow passage of the large traction belts to power the threshing machine parked on the threshing floor. The dormer awning and doors provided an outlet for the chaff which the threshing machine would have blown out onto a large pile in the barnyard.

PHASE 6: ADDITION 3

The construction of addition 3 increased the length of the main block of the barn by 60 feet. The addition is characterized as having:

Plan: 44 feet wide by 60 feet long "L" shaped first story; second story is 44 feet wide

Section: An indentation of the southeast first story wall continues the original barn forebay for 23 feet; first story wall from north of that point is under second story above; height of addition 3 is the same as the original barn.

Structure: The first story structural system consists of posts or stone piers supporting the girders; second story has 4 bents of a structural design significantly different from the original barn (figure 32).

Materials: The materials are similar to those used in the original barn.

Use: The uses are essentially the same with the first story being used as a cattle loafing pen; the second story repeats the pattern of the original barn with hay storage bays flanking a center threshing floor; a one story granary is located in the northeast corner.

Other features:

Roof ventilators

Five roof ridge ventilators of sheet metal construction were added to the enlarged barn along the ridge line (figure 33).

Cistern:

Another cistern was constructed to the north of addition 3 to provide for additional water needs; it is 21 feet by 10-1/2 feet and is located 4-1/2 feet north of the addition and 6 feet west of the northeast corner; it is a rectangular concrete block vault with a flat slab roof.

Documentation:

The construction of the addition falls within the memory of persons yet living or who until recently were alive. There is a date carved into the wooden post at the southeast corner of the addition at the ground story. This inscription reads in part: "Lester, USB, ____, __uly 3 1914." It is presumed that the date 1914 was carved shortly after the construction of the addition (figure 34).

PHASE 7: ALTERATION/ADDITION TO ADDITION 1

The final change to the appearance of the barn occurred with the alteration to addition 1. The roof height was lowered to be the same as the corncrib-wagon shed addition. The pitch of the roof was also lowered. The lowering of the roof pitch allowed for an addition on the west side of addition 1. The new addition used the 8 feet remaining exposed of the south bank wall as its north wall. A simple post and girt wall was constructed to form the west wall. The south elevation was a large doorway. The alteration/addition resulted in the original addition 1 structural system being incorporated into the new structure. The result is a melange of structural elements and fastening techniques combined in one structure. This final change is depicted in the drawing for phase 7 of the historic development series.

It is believed that the last alteration and addition of addition 1 occurred in 1929.[22] There is a record of an interview conducted in 1969 by a member of the Antietam National Battlefield staff which conflicts with this date,[23] but the physical evidence at the site would not support a mid 19th century date of construction for the alteration, as was mentioned in the interview record.

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22. James Askins, interview.
23. R. P. Buchanan, interview of S. Webster Piper, Sr., April 1, 1969. Antietam N.B. Archives.

EXISTING CONDITIONS OF THE PIPER BARN

PHASE 8

To describe and record the existing conditions of the barn required several surveys and investigations. A measured drawing survey was conducted by trainees of the Williamsport Training Center. The result of this survey was the production of a 20 sheet set of drawings entitled "Existing Conditions Drawings".

These measured drawings depict the materials and dimensions as found in the barn at present. In addition, the drawings incorporate notes which indicate various features of the barn. Other notes indicate problems which were observed involving deterioration of the historic fabric. The sources of deterioration include physical damage, insect attack, and fungal decay. Evidence of inappropriate actions by some past users of the barn was also observed and noted.

Survey of Existing Conditions

The existing conditions of the barn are outlined in the following series of discussions.

Roof Covering: The roof covering is corrugated metal sheets, 2 feet X 10 feet. The sheets have been in place on the roof since the mid 1930s. The sheets are deteriorated due to the action of weathering. See also discussion of roof structural system.

Rain Handling System: The rain handling system is composed of metal gutters and downspouts. The cisterns were formerly filled by roof runoff directed to them through several downspouts. The system is not functional.

Due to heavy snow and ice loading, a number of the gutters have been twisted out of alignment or are bent out of shape. In many locations, the gutters have rusted through and carry no water. The result is that the exterior wood siding and stone foundation are subjected to excessive drenching during rain showers. Where water is being carried by the gutters, the connections with downspouts are often loose or the bottom sections of the downspouts are missing. The result is drenching of the wood siding and stone foundation walls.

Wood Siding: The barn's non-masonry walls are covered with vertical board siding which is nailed onto the underlying structural system. The siding boards are about 1 inch thick and vary in width from 3 inches to 1 foot 9 inches. The boards run the full wall height on the east and west elevations, up to 15 feet. On the north gable, three superimposed rows were applied. Originally, various species of pine were used. Later, yellow poplar was used for replacement boards.

The wood siding boards, as they are separate pieces, vary greatly in their present conditions. The problems affecting the siding boards include:

a) water drenching by the dyfunctional rain handling system;

b) insect attack;

c) oxidation by weathering;

d) fungal decay, and/or;

e) physical stresses.

The results of these problems are that many of the boards are deteriorated or damaged to the extent that they no longer perform a weather shedding function. In other cases, the failure of the boards is localized to their bottom ends.

Masonry: Coursed field stone rubble was used for the other walls of the barn. At the corners and over doors and windows, the stones were more carefully formed (figure 35). The stones were laid up with a high lime content mortar which has been repointed several times. The latest pointing exhibits a "chisel" tooling and used a relatively hard, brittle mortar.

The general conditions of the masonry walls and foundations are good; there are, however, several areas of localized failure which will require stabilization work.

The problems affecting the masonry adversely include:

a) water drenching and erosion of the mortar joints resulting in loosened stonework;

b) abuse by cattle rubbing stonework loose; and

c) localized overloading of the structure, particularly at door threshholds, resulting in stonework failures.

Roof Structural System: The roof structural system includes the roofers or nailer strips, rafters, purlins, and rafter plates. The general condition of the system is adversely affected by several problems which include:

a) water leakage through the roof covering;

b) fungal attack;

c) insect attack; and

d) physical stresses resulting from wind and snow loadings.

Second Story Bent System: The bent system of the second story of the original barn exhibits a number of severe problems which affect its individual and collective structural integrity. These problems include:

a) broken mortise and tenon joints resulting from excessive movement of one or both members;

b) weakening of members due to fungal decay or insect attack;

c) cracking of members due to overloading; and

d) checking and splitting of members.

One or more of these problems are observed in all three of the original barn second story bents. The most seriously affected one is the first bent, #21, on the south end of the barn. The top tie beam of the bent exhibits a pronounced horizontal bow out of alignment (figure 40). This movement has affected the three intermediate posts which have all slipped from their mortises. At either end, the joints between the two tie beams and the end posts are broken.

The center bent, #22, while it does not display the excessive bending of its top tie beam, does have joint problems. Similarly as with the first bent, the joints between the tie beams and the end posts have broken (figure 41).

The third bent, #23, resembles the second in its collection of problems. The tie beam and end post joints have been adversely affected by movements in the bent system, resulting in the breaking of one or more elements in the joints (figure 42).

In all three bents, there is evidence of past efforts to restrain the movements and to reinforce the critical joints. Iron straps in the form of a "J" were used at the joints in attempts to hold the tie beams and end posts together. These past efforts were not successful, for in most cases, the bent system movement has continued (figure 43).

The problems of the bent system arise from several different sources. These include:

a) poorly conceived original design for the bent system;

b) fungal decay brought on by the presence of water entering through the faulty roof and/or gutters;

c) insect attack;

d) excessive loading resulting from snow and winds;

e) excessive loading of stored hay and machinery; and

f) removal of structural elements.

The bents of addition 3 exhibit some similar problems, but these are not as serious as those observed in the original barn. The problems include:

a) broken mortise and tenon joints resulting from excessive movement of one or both members, insect attack, or fungal decay; and

b) checking and splitting of members.

The first bent of addition 3 is designated as bent 24. This bent has several open joints in the column supporting the west purlin. There is also a problem at the joint between the west post and the west rafter plate.

Bent 25, the second bent north of the original barn's north stone gable, exhibits more serious problems. The post supporting the east purlin has a number of broken joints with the members which connect to it (figure 44).

Bent 26 exhibits a similar range of problems. The post which supports the west purlin has three broken joints where either pins or tenons have broken.

Bent 27 forms the underlying structure for the north gable wall. It thus incorporates a great number of nailers and intermediate posts. The additional members serve for nailing of the exterior siding boards. There was only one broken joint observed in the bent. This problem occurs on the column supporting the west purlin. The bent, though, has a generalized problem with incipient fungal decay at the junctures of the vertical siding boards and the underlying nailers. Rain and snow are blown through the cracks and the water sets on the horizontal nailers.

The problems of the bents of addition 3 appear to result from similar sources to those affecting the original barn's bents. These sources include:

a) overloading by stored hay, machinery, and other materials;

b) overloading from snow and winds;

c) fungal decay brought on by the presence of water entering through the siding on exposed sides;

d) insect attack; and

e) removal of structural elements.

Wall Posts and Nailers: The existing conditions of the secondary structural system of posts and nailers vary from good to very deteriorated. The areas of deterioration are generally localized to a few members, but the specific areas of deterioration on a specific member may adversely affect its entire structural integrity.

The problems of the wall posts and nailers include:

a) insect attack; and

b) fungal decay.

These problems arise from a number of sources:

a) The faulty roof and rain handling systems have allowed water to enter many areas of the perimeter walls resulting in fungal decay.

b) The lack of termite shields along the ground and a lack of preventative maintenance has allowed termites to gain access to the members.

c) Weathering from wind and sun has weakened the nail clenching capabilities of the members.

Flooring: The permanently floored bays of the original barn and addition 3, bays 2002, 2003, and 2006, are generally in good condition. Localized failures of individual boards were observed. Inherent weakness of a board or overloading by machinery probably caused the failure.

The bays which were and are being used for the storage of hay do not have permanent floorings. In these bays a haphazard method of supporting the hay bales utilizes boards of varying lengths and widths.

Second Story Floor Structures: The floor structure is composed of floor joints which in turn bear onto two series of girders. The floor joists span from the west wall over the two girders to the east wall, from which they cantilever out eastward to support the forebay. The floor joists are approximately 7 inches X 11 inches in section and their entire length is about 43 feet. The cantilever at the east end is about 6-1/2 feet.

The girders in series run north to south, spanning from the stone gable walls across the ground story bents. These girders are 11 inches X 12 inches in section.

The floor structure is affected with problems at the east end of the floor joists where they function as cantilevers. The ends of the floor joists exhibit problems including:

a) fungal decay and/or

b) insect attacks.

Of the 26 floor joists in the original barn, 14 exhibit one or both of the problems above. The deterioration is confined to the cantilevered end, but there is no noticeable sagging of the forebay structure, which would indicate a loss of structural integrity as yet. The type of deterioration varies. In some joists the sapwood has deteriorated to the point that beneath an outer layer of whitewash the joist has no integrity except at the heartwood. In other beams, the situation is

reversed: the sapwood retains its integrity while the heartwood has deteriorated and vanished (figure 45).

The sources of the problems are several and have been discussed in other areas. These include:

a) Fungal decay encouraged by the presence of standing water which entered as a result of the faulty roof, rain handling system, or siding.

b) Fungal decay encouraged by the presence of standing water as a result of poor original detailing of the forebay structure or

c) Lack of termite shields which allowed the termites to gain access to wood members.

The girders of the original barn do not exhibit visible problems of deterioration or overloading. It was not possible, though, to observe all surfaces of these girders.

The girders of addition 3 have been adversely affected by several actions. The girders in the south end of the addition, over bay 1008, display severe deflections which are causing excessive movements in the second story bents resulting in broken joints. The girder deflections are a result of:

a) removal of supporting columns in bay 1008; and

b) overloading of the floor structure above in bays 2005-6 by hay and machinery.

At the north end of the addition the girders and floor joists are deteriorated are a result of:

a) fungal decay, and

b) insect attacks.

The cause of these problems is the closeness of the wood members to the soil, allowing water and termites to have contact with wood members. The floor structure is also greatly overloaded with materials such as fence posts and rails.

First Story Bent System: The first story bents of the original barn are in poor to fair condition. There are problem areas which pose the potential for affecting the structural integrity of a particular bent. The first story bents are constructed of heavy timbers used for posts, sills, and tie beams. The bents are generally a simple rectangular structural system with no diagonal bracing. Each bent, though, has fastened to it and interconnecting its members, either grain troughs and hay racks or horizontal board partition walls. These functional features perform as bracing to a degree, but not sufficiently. Underlying each bent sill is a stone foundation formed of roughly

coursed field stone rubble. The bents, except the fifth and sixth, stop short of the west wall, thus providing space for an aisle interconnecting the bays.

The problems which were observed include:

a) loss of integrity of stone foundations;

b) insect attack;

c) fungal decay;

d) leaning of the bent posts; and

e) horizontal movements of the bent sills.

The causes for these problems are observed to be:

a) infestation by ground hogs and abuse by cattle;

b) lack of termite shields to deter termites attacks; and

c) rising damp from ground.

The deterioration of the stone foundations is found throughout the barn. The problem, though, varies in its severity. In locations, there are only a few stones missing; in others, entire sections of the foundation are non-existant, thus forcing the sills to act as beams.

The termites have infested certain members. It was observed that the infestations have adversely affected the structural integrity of several individual members and particularly the sills (figure 46).

The misalignments of the bent members are observed most noticeably in bent 11. The posts of bent 11 are out of vertical alignment and lean to the east. Post leaning is also observed in bents 13, 14, 15, and 16. The horizontal movement of the sill is observed in bent 13. The sill has been pushed off the stone foundation at the west end and the displacement is about 5 inches. This displacement is most pronounced at the bottom of the bent 13.

Addition 3 does not have a system of bents similar to that found in the ground story of the original barn. There is a series of wooden posts which provide support for the second story floor structure. As noted previously, several of these posts have been removed, resulting in severe deflections in the girders and floor joists formerly supported by the missing posts.

Wall Sills: The wall sills of the original barn and addition 3 were not closely examined. The stored hay and other materials generally prevented the close observation of these members. Given their close proximity to the ground and to the exterior, it can be expected that problems arising from insect attacks and fungal decay will be encountered.

Ventilators: The first story of the original barn is punctured by a number of openings in the stone walls. Built into these openings are wood frames which hold square pegs. The conditions of the ventilator frames range from good to vanished. The pegs are often missing or broken (figure 47).

Doors: The first story of the original barn has seven Dutch doors which provide access to the bays. The Dutch doors are hung from frames which are built into the stone walls. Generally, the doors and frames exhibit a significant amount of wear from human and animal use. The doors, though, are generally serviceable and are considered to be in fair condition (figure 48).

The second story of the original barn and addition 3 has large pairs of wagon doors on the west elevation. These doors have been repaired in the recent past and are in fair condition. The east elevation of both sections has a number of doors which open out, or awnings which open up. A number have been nailed shut and are not operable. Those that still open are in fair condition.

Addition 1: The wood structural system, the siding boards, and the roof of addition 1 have all lost their structural integrity due to:

a) fungal decay;

b) insect attack; and

c) weathering.

The wood structure of the addition is collapsing slowly at the present time. Its inevitable collapse is being restrained by a series of cables which connect the top of its roof structure to the west stone wall of the barn through the embrasures. Without these cables, it is likely that the wood structure would have collapsed to the west in the past.

The stone wall which was constructed to form the west and south walls of the addition is deteriorating due to the erosion of its mortar joints. Many of the stones are loose with the top of the wall being particularly subject to mortar erosion and loosening of the stonework. The east end of the south wall is leaning to the south and threatens to eventually collapse onto the floor in the wagon shed.

Addition 2: The general condition of the corn crib and wagon shed which comprise addition 2 is good. The wood structural members exhibit a degree of weathering due to the effects of sun and wind, but this weathering has not visibly affected the structural integrity of the addition. Given the probable age of the addition, such an amount of weathering is to be expected. The wood members also exhibit the effects of erosion from continued use. This erosion has not adversely affected their integrity. Evidence of fungal decay and insect attacks was observed in the sills and lower sections of siding boards.

The mortar joints of the corn crib stone piers have suffered erosion but no pier has collapsed. The bent structure stands on a series of stone

piers. These piers are merely piles of flat stones. The stability of these does not appear to be in question at the present time. An accident with moving farm machinery might easily upset a pier and cause the bent to be knocked from its other piers.

Addition 3: The overall condition of addition 3 is fair. There are a number of localized problems which require stabilization work but the essential structural integrity of the addition has not yet been compromised. The various components which make up addition 3 have been reviewed along with the discussions on the similar component of the original barn.

IMPACT OF THE PROPOSED USE ON THE INTEGRITY OF THE PIPER BARN

Introduction. As discussed in the administrative section, the proposed use of the barn will be a continuation of the present use pattern by a permittee farmer and park maintenance staff. A continuation of the present mixed use will not have an adverse impact on the integrity of the structure if limitations on the use are observed and maintained. Given the intensity and type of uses of the barn, regulations for human safety, energy conservation, and handicapped access will be provided for within the context of the treatment work.

Use of the Barn. The barn is and will be primarily used for agricultural purposes by a permittee farmer. As a secondary use, park management is and will use the barn for the storage of infrequently needed materials and equipment. The net result of this mixed use in terms of human occupancy is limited. Generally, the barn is not and will not be occupied by people for any long periods of time during the day or night.

The pattern of use at present has the permittee farmer visiting the barn usually twice a day, during the morning and late afternoon to check upon and feed his herd of beef cattle. These visits are generally very short in duration. The visits by the park staff are much less frequent and are similarily short in duration. The beef cattle have access to several of the first story bays where the farmer provides feed for them. The cattle are not usually confined to the first story and are not prevented from leaving the barn.

The limited occupancy of the barn resulting from this use pattern does not require that there be special provisions for life safety beyond the anticipated scope of the work. In the event of a fire, the open nature of the second story and the interconnections of the first story bays would allow a second means of egress to be found by an able human occupant relatively easily. The provision of lighted exit signs and emergency lighting is not relevant to the barn's use. The provision of a smoke and fire detection system with the capability of automatically summoning park and non-park emergency forces may be appropriate, given the relatively isolated location of the barn away from well traveled routes.

The use of energy is and will be very limited. Electrical power for lighting is provided to the barn for use by the permittee and park staff. A program of energy conservation is not relevant for the barn as it is not heated or cooled.

Handicapped access to the barn is a need which has limited relevance to the work if the present use of the barn continues. The present users of the barn are ambulatory and do not require special provisions for their movement into and through the barn. A change in this situation is not expected given the nature of the permittee's work and the work performed by park staff within the barn.

The barn's section and site would allow provisions for handicapped access to be made relatively easily if the need were to arise. The barn bank, which slopes upward from the farm lane, provides access to the second story. On this bank, a ramp for wheelchair movement could be provided. The many raised thresholds found in the barn pose problems which would require the removal of historic fabric to lower a sill, or else the construction of a ramp to pass over it.

SAFETY AND LOAD BEARING LIMITS

INTRODUCTION

The Piper Barn suffers visible structural defects in its foundation, the bent system, and its roof structure. These defects include localized collapses of the stone foundation walls; shifting out of alignment of its bents; the breaking of many joints of its bents; and the deflection of beams. The structural defects arise from a number of factors. The loadings to which the barn is subjected by man and nature are primary factors. Where feasible to implement, limitations on the loadings will enhace the barn's longevity.

OBSERVATIONS AND ANALYSIS

In the subsection describing the existing conditions, the several problems which affect the barn were noted for each of its components and systems. The table below presents the observations and analysis which have been developed for this report on the structural problems of the barn, their source, and the solution/limitation each problem would require for resolution.

As illustrated above, the barn is subjected to loads derived from different sources. These are live or dead loads. These loads are man-made or natural in origin. Those loads which are caused by the permittee farmer or the park staff in their movement of machinery or storage of equipment and materials are subject to management limitations. The other loads coming from natural causes are not subject to such limitations and must be anticipated in the reinforcement of the structural system.

Limitations placed on the use of the barn will provide savings in terms of reduced capital costs for structural reinforcement and an enhanced longevity of the barn. Conversely, the limitations of use may cause economic costs. The advantage to be gained with particular regard to the life of the barn will outweigh the costs that limitations on use may impose.

STRUCTURAL PROBLEMS OF THE BARN

COMPONENT	PROBLEM	SOURCE	SOLUTION/LIMITATION
Original Barn:			
1. West foundation wall, bay 1004	collapse of wall.	movement of heavy machinery over threshold above problem area.	a. reinforcement of thresh-hold area. b. limitation of weight of machinery.
2. First story bent 13	shifting of bent southward off its foundation.	a. related to above problems with movement of health machinery. b. deteriorated bent foundation. c. lack of connection between bent and its foundation.	a. as above in 1a. b. as above in 1b. c. resetting of bent and its connection to restored foundation.
3. Second story bent 21	horizontal deflection of top tie beam.	a. fungal decay induced by pigeon excrement. b. suboptimum original design.	a. removal of pigeons. b. reinforcement of bent.
4. Second story bents 21, 22, and 23	breaking of joints.	a. movement of bents for response to wind loads in west elevation. b. suboptimum original design.	a. reinforcement of bents in east-west direction.
Addition 3:			
5. West foundation wall beneath bay 2006	collapse of wall.	movement of heavy machinery over threshhold above problem area.	a. reinforcement of thresh-hold area. b. limitation on weight of machinery.

STRUCTURAL PROBLEMS OF THE BARN

COMPONENT	PROBLEM	SOURCE	SOLUTION/LIMITATION
6. East and west girders (bay 1008)	deflection downward.	a. removal of intermediate columns. b. overloading of bay above with bales of hay.	a. replacement of missing columns. b. limitation on loading of bays with hay.
7. Second story bents 25 and 26	breaking of joints.	a. as above. b. as above.	a. as above in 6a. b. as above in 6b. c. restoration of joints. d. reinforcement of bents in east-west direction.
8. East and west girders bay 2007	collapse of beams.	a. fungal decay. b. insect attack. c. overloading of bays above with park materials. d. suboptimum original design.	a. replacement of decayed beams. b. protection from fungal decay. c. protection from insect attack. d. limitation on weight of materials stored in bay 2007.

DISCUSSION OF ALTERNATIVE TREATMENTS FOR THE BARN

Two alternative sets of recommendations for the treatment of the Piper Barn have been developed for consideration. These alternatives vary primarily in the treatment of addition 3 and the roof covering which is to replace the existing roof. Both alternatives call for the restoration and repair of the exterior using duplicate materials. On the interior, the treatment in both alternatives will be a combination of traditional and contemporary techniques for the restoration and repair of the historic structural system. The third "no action" alternative is discussed below.

ALTERNATIVE 1

Original barn:

a. Repair of stone foundation and walls using traditional materials and techniques.

b. Repair of wood structural system using combination of traditional and contemporary materials and techniques.

c. Repair and replacement of exterior wood features using duplicate materials and techniques.

d. Replacement of existing roof covering with standing seam metal roof material.

Addition 1:

a. Demolition of wood superstructure

b. Stabilization of first story stone wall

Addition 2:

a. Scope and intent of work is the same as described for the original barn.

Addition 3:

a. Scope and intent of the work is the same as described for the original barn.

ALTERNATIVE 2

Original Barn:

a. Scope and intent of the work is the same as described for the original barn in alternative 1 with the exception that the existing roof covering is replaced with wood shingles; and

b. Removal of dormer alteration.

Addition 1:

a. Scope and intent of the work is the same as described for the original barn.

Addition 2:

a. Scope and intent of the work is the same as described for the original barn.

Addition 3:

a. Demolition of the roof, wood siding, and wood structural system;

b. Demolition of the stone foundation walls;

c. Demolition of the north cistern;

d. Salvage and reuse of materials where possible and removal from site of all excess materials; and

e. Regrading the site to approximate the historic grade which existed prior to the construction of addition 3.

ALTERNATIVE III

This alternative of "no action" would result in the barn receiving only minimal maintenance on a sporadic basis. This alternative would be an "effect" from 36 CFR Part 800.3(a) and would probably be considered an "adverse effect" from 36 CFR Part 800.3(b) (4) which reads, "neglect of a property resulting in its deterioration or destruction." This is the case as the present level of maintenance does not address the structural problem of the barn.

There is no method of mitigating this alternative. Further, this alternative would violate the legislative mandate to preserve and interpret the historic resources of the Antietam Battlefield. Thus, this alternative is not a viable alternative for management consideration.

BASIS FOR ALTERNATIVE RECOMMENDATIONS

Each alternative presents its own set of positive and negative points. These points deal with several issues which are interrelated to one another. These issues center on the questions of documentation, significance, interpretation, and economics.

The relative significance of the barn and and its additions must be examined. Further, there is the question regarding the primary theme of the park and those additions which were built after this period of primary significance.

How the barn with its several post-battle additions/alterations is to be interpreted must also be examined. There is the question of how many themes are appropriately interpreted.

Documentation poses the question of what are the dates of construction for the barn and its additions/alterations. How are the issues of significance and interpretation to be resolved in the light of documentary uncertainty?

Finally, economics presents the here-and-now touch stone. One asks, how are scarce monies to be allocated? One ponders how architectural triage is to be conducted if required by the economics of the situation.

Alternative 1 essentially proposes the retention of the present appearance of the barn and its additions. The major exception is the proposed demolition of the wooden superstructure of addition 1, which is beyond repair. The new roof covering of the standing seam metal of the original barn and the remaining additions would be based on historic precedent.

The positive points for alternative 1 are:

a. It would allow the future interpretation of all aspects of the barn's significance;

b. It retains, for the most part, the appearance the barn has had since 1914; and

c. It provides the larger volume and floor area of the two alternatives for permittee farmer and park staff.

The negative points for alternative 1 are:

a. It retains addition 3, which was built after the period of the barn's primary significance, the Battle of Antietam in 1862;

b. It retains addition 3, which poses difficulties and complexities, for interpretation of the park's primary theme; and

c. It retains addition 3, which obscures the original barn and particularly its north stone gable wall from view from the observation tower.

Alternative 2 proposes the restoration of the barn to an appearance it had during some period prior to 1914. As discussed in alternative 1, the exception is the proposed demolition of the wood superstructure of addition 1. The new roof covering of wood shingles is based on historic precedents.

The positive points for alternative 2 are:

a. It would allow the focus of future interpretation of the primary theme of the park;

b. It would present an appearance which the barn had, for the most part, prior to 1914; and

c. It would concentrate the construction budget on the original barn, which is the part of the barn related to the park's primary theme.

The negative points for alternative 2 are:

a. It would present an appearance for which a documented period has not been determined with certainty given the physical and documentary evidence;

b. It would reduce the volume and floor area available for use by the permittee and park staff; and

c. It would require the demolition of an addition which has stood since 1914.

ALTERNATIVE 1: RECOMMENDATIONS FOR IMPLEMENTATION

Alternative 1:

Original Barn

First Story

Site/Floor:

1. Remove debris from site for disposal.

2. Remove objects identified as archeological.

3. Install French drains at bases of selected foundation wall.

Masonry Walls/Foundations:

1. Repair areas of loose stonework.

2. Replace missing stone.

3. Repair cracks in stonework over lintels.

4. Repoint mortar joints.

Door/Ventilator Openings:

1. Replace missing wood pieces of ventilators and doors with duplicate wood pieces.

2. Repair deteriorated elements of ventilators and doors by splicing new wood elements.

Bent System:

1. Restore structural integrity to stone foundations by replacing missing and loose stones and repointing with mortar.

2. Reset bents on the foundations.

3. Connect bents to foundations with tie rods at indicated locations.

4. Fill voids in wood pieces of bents with epoxy resin and foam technique.

5. Repair indicated areas of wood pieces with epoxy resin technique.

6. Replace indicated areas of wood pieces with duplicate material.

Second Story Floor Structure:

1. Treat the deteriorated east ends of the floor beams by one of the methods below as indicated:

   a. For floor beams with deteriorated heartwood cores, fill the void using the epoxy resin and foam technique; or

   b. For floor beams with sapwood decay, restore the former shape with forms using the epoxy resin and foam technique;

   c. For floor beams where structural integrity has been lost, remove deteriorated end, and replace with new beam.

Second Story:

Second Story Floor Covering:

1. Repair or replace damaged floor boards in bays 2002 and 2003 with duplicate material.

Bent System:

1. Repair indicated bent pieces by splicing in duplicate materials,

2. Replace indicated bent pieces using duplicate materials;

3. Repair indicated bent pieces using epoxy resin and glass fiber rod reinforcing technique;

4. Repair indicated joints using epoxy resin and glass fiber rod technique;

Nailers:

1. Repair indicated nailers by splicing in duplicate material.

2. Repair indicated nailers using epoxy resin and glass fiber rod reinforcing technique.

3. Replace indicated nailers with duplicate materials.

Wood Siding:

1. Replace deteriorated bottoms of indicated siding boards with duplicate material.

2. Replace entirely indicated boards with duplicate boards.

Roof Structure:

1. Replace indicated roof rafter plates with duplicate material;

2. Replace indicated purlins with duplicate material;

3. Remove existing rafters and replace with duplicate material;

4. Remove existing nailers and replace with duplicate material;

5. Remove existing corrugated metal sheet roofing and replace with standing seam metal roof.

Rain Handling System:

1. Repair cisterns to hold water from roof runoff;

2. Install cistern overflow drain and connect with site drains;

3. Remove existing gutters and downspouts and replace with new gutters and downspouts;

4. Connect downspouts to cisterns or site drains.

Roof Features:

1. Repair roof ridge ventilators using duplicate materials;

2. Install lightening rods and connect to ground.

Wood Preservative Coatings:

1. Treat all new wood to be installed in the barn with wood preservative;

2. Prepare and coat all exterior exposed wood surfaces with whitewash.

Mortar:

1. Prepare and use mortar for repointing following approved formulas.

Vermin Control:

1. Dig up and destroy all ground hog tunnels within barn and in immediate vicinity;

2. Treat ground to deter the infestation of termites;

3. Fill all openings which provide egress for pigeons to the barn with wire screen attached to framework;

4. Fill the top openings of the roof ventilators and the backs of the wall ventilators and embrasures with wire screen attached to framework to deter egress of pigeons;

5. Install termite shields on the underside of all wood pieces in contact with stone masonry.

Protective Systems:

1. Install smoke and fire detectors in the first and second stories and connect detectors to telephone lines.

Addition 1:

Site/Floor:

1. Scope of work is the same as described for the original barn recommendations.

2. Cover ground within walls with bed of stabilized earth.

Masonry Walls:

1. Dismantle the east end of the south wall and rebuild;

2. Repoint mortar joints with mortar;

3. For the walls with dry stonework, reset loose stonework;

4. Place cap stone on old walls to shed water.

Wood Structural System:

1. Dismantle and remove from the site the roof covering, roof structure, walls, and floor.

Protective Fencing

1. Install fence along the upper edge of the barn bank south wall.

Addition 2:

Site/Floor:

1. Scope of the work is the same as described for the original barn recommendations.

Masonry Foundation:

1. Reset loose masonry in foundation piers.

2. Repoint mortar joints with mortar.

New Construction:

1. Fill void in west end of north wall left by demolition of addition 1 with wood framework.

2. Cover new framework with vertical wood siding boards.

Roof Structure:

1. Remove existing nailers and replace with duplicate material;

2. Remove existing corrugated metal sheet roofing and replace with roofing as indicated.

Rain Handling System:

1. Remove existing gutters and downspouts and replace with new gutters and downspouts;

2. Connect downspouts with site drains.

Wood Protective Coating:

1. Treat all new wood to be installed in the barn with wood preservative as indicated;

2. Prepare and coat all exposed exterior wood surfaces as indicated with whitewash.

Addition 3:

Site/Floor:

1. Scope of the work is the same as described for the original barn recommendations.

Masonry Walls/Foundation:

1. Scope of the work is the same as described for the original barn recommendations.

First Story Structural System:

1. Raise the second story girders with jacks;

2. Install new foundations and columns to support girders as replacements for missing columns.

3. a. Remove the existing floor structure;

   b. Remove the deteriorated girders;

   c. Lower the level of the ground to the indicated level;

   d. Replace the stone piers with concrete block piers;

   e. Replace the girders with duplicate material;

   f. Replace floor joists;

   g. Cover floor structure with floor boards.

Second Story Wall Structural System:

1. a. Raise the wall structure with jacks in sections;

   b. Remove existing deteriorated and/or undersized wall sill; and

   c. Replace with new sills.

2. Replace missing nailers with duplicate material

Bent System:

1. Replace broken pins in those affected joints.

2. Restore broken joints using epoxy resin and glass fiber rod reinforcement technique.

3. Place steel bands around indicated bent pieces at indicated locations.

Wood Siding:

1. Scope of work is the same as described for the original barn recommendations.

Roof Structure:

1. Scope of work is the same as described for the original barn recommendation.

Roof Features:

1. Scope of work is the same as described for the original barn recommendation.

Rain Handling System:

1. Scope of work is the same as described for the original barn recommendations.

Vermin Control:

1. Scope of work is the same as described for the original barn recommendations.

Protective System:

1. Scope of work is the same as described for the original barn recommendations.

ALTERNATIVE II: RECOMMENDATIONS FOR IMPLEMENTATION

Alternative 2:

Original Barn:

1. Scope of work for all categories is the same as described for alternative 1 with two exceptions:

Roof Covering:

1. Remove dormer.

2. Remove existing corrugated metal sheet roofing and replace with wood shingles.

Addition 1:

1. The scope of work for all categories is the same as described for alternative 1.

Addition 2:

1. The scope of work for all categories is the same as described for alternative 1 with the exception of the roof covering as noted above under the "Original Barn."

Addition 3:

1. The scope of work is the demolition, salvage, and removal from the site of addition 3 and the regrading of its site back to the historic grade as indicated.

WORK COMMON TO ALTERNATIVES 1 AND 2

Site:

1. Remove electric lines from poles and install lines in underground conduit and remove poles.

2. Install telephone lines to barn in underground conduit.

3. Install water line with outlets at the barn for use of the permittee farmer, park staff, and for use during fire emergencies.

Electrical System:

1. Remove existing wiring and fixtures;

2. Install new wiring in metal conduit in locations and manner as indicated.

RECOMMENDED TREATMENT: ALTERNATIVE 1

It is recommended that alternative 1 be the course of action which is chosen. The reasons for this recommendation are as presented below. Alternative 1 will:

1. Preserve the appearance of the barn which it has had since 1914.

2. Allow the wider range of interpretive themes without precluding any particular theme.

3. Maintain the larger floor area and building volume for use by the permittee farmer and the park management.

4. Follow most closely the maxims which state:

> Better preserve than repair,
> better repair than restore,
> better restore than reconstruct.
>
> It is ordinarily better to retain a genuine
> old work of several periods, rather
> than arbitrarily to 'restore' the

whole, by new work, to its aspect at a single period.[25]

5. Follow a course of action which has a firm basis of documentation and/or physical evidence, as opposed to the second alternative which is more speculative given the dearth of documentary evidence.

ANALYSIS OF THE IMPACT OF THE ALTERNATIVES

Considering the proposed work to be done on the Piper Barn, one must choose among three alternatives which include:

I. stabilization of the existing structure;

II. restoration of the structure to a particular historic period, specifically the Civil War; and

III. no action to arrest the deterioration of the barn.

The first alternative is the choise recommended by the Denver Service Center, National Capital Team to the National Capital Region. This recommendation is based on several factors which include:

a) a lack of documentary evidence on the barn's historic development; and

b) a lack of long-range planning documents for the park and its cultural resources.

ALTERNATIVE I:

With this alternative, the original barn and additions 2 and 3, using a combination of restorative and modern techniques, would be stabilized. The present deteriorated roof, which dates from the 1930s, would be replaced with a standing seam metal roof. The wood superstructure of addition 1 would be demolished and its stone foundation would be stabilized.

The situation with addition 1 required that the wood superstructure be demolished as it has no structural integrity due to insect infestation and fungal decay of its structural members. Cables connecting it to the stone walls of the barn keep it from collapsing of its own weight. In this unstable condition, it constitutes a safety hazard which has no remedy other than demolition down to its stone foundation walls.

This undertaking would have an effect on the Piper Barn following the Criteria of Effect, 36 CFR Part 800.3 (a). The effect probably would not be considered an adverse effect for the following reasons:

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25. National Park Service, Management Policies, Washington, 1978, pp. v-15.

1. a. Addition 1 has no structural integrity due to insect infestation and fungal attack which have resulted from long-term neglect of the structure.

b. The demolition of the wooden superstructure and the stabilization of the stone walls are preliminary steps for any action, whether it be stabilization of the stone walls as a ruin or a future reconstruction of the wooden superstructure to recover one of its several appearances.

c. The wood superstructure constitutes a safety hazard due to its unstable condition and its collapse from its own weight will probably occur in the near future.

2. The treatments for the other areas of the barn are stabilization and/or restoration of existing fabric.

ALTERNATIVE II:

With this alternative, the original barn and additionals 1 and 2 would be treated in a similar manner to alternative I. The roof replacement material would be wood shingles, as based on historic precedence. The demolition of addition 3 would be a major change as compared to alternative I. Other differences would involve removal of the roof ventilators and dormer, the demolition of the cisterns, and the regrading of the site to its historic configuration.

This undertaking constitutes an "effect" from 36 CFR Part 800.3(a) and this effect would probably be found to be an "adverse effect" from 36 CFR Part 800.3(b) which reads, "Destruction or alteration of all or part of a property." To mitigate the adverse effect, there are several possible actions which include:

1) Record addition 3 with measured drawings.

2) Record addition 3 with photographs.

3) Fulfil other requirements desired by SHPO/ALHP.

Regarding these recommendations, the first has been carried out and record drawings exist. The barn has been extensively photographed, but the photographs have all been taken with 35 mm. cameras. A large format camera using a perspective control lense would record addition 3 with better quality photographs and this action is recommended.

DISCUSSION:

Alternative I was recommended as the course of action for several reasons. The first reason involves the historic data uncovered during the research for the historic structure report. Data is lacking to allow a determination of the exact form and appearance of the barn during the Civil War.

The second reason for choosing Alternative I deals with the lack of the usual and expected planning documents providing guidance for management and design professionals in making decisions on part structures. Without a general management plan, a development concept plan, or a detailed interpretive prospectus, it is felt that any decisions relative to Piper Barn, other than those called for under Alternative I, would be inappropriate at this time as no specific goals or objectives have been determined for the structures.

Therefore, to proceed with alternative II would be a violation of applicable NPS policies and guidelines which would require special approval from WASO.

RECOMMENDATIONS FOR FURTHER STUDY

The recommendations made for alternative treatments I and II include limitations on the scope of those treatments. These limitations consider the proposed use of the barn and the degree of visitor contact with the barn.

The scope of the treatments in alternatives I and II is limited to maintaining the structural integrity of the barn and to using restorative treatments for the exterior fabric. The scope of the treatments does not include restorative treatments for missing interior features which do not have a direct relationship to the structural integrity of the barn. Such features would include the various grain troughs, hay racks, and tack racks of the basement bays wherein were kept the farm animals.

The scope of the alternatives is limited in this manner because of the nature of the barn's use and the degree of visitor contact. The barn is not intensively used by the park management other than for long term storage of materials and equipment. For the interpretation of the park's primary theme, the Battle of Antietam, the barn functions as a background building within the historic scene. At present, visitor contact with the interior features of the barn is not a regular part of the park's interpretive efforts. The exterior appearance of the barn is the most important visual feature for the present function of the barn in the park's interpretive program.

If the function of the barn for the park's interpretative program were to be changed and if the barn were to be made available for visitors, there would be the need for further studies and for further restorative treatments. These studies include historical, archeological, and architectural themes.

Historical studies would include:

1. A study of farming practices in the general vicinity of the barn during the period of the barn's historic significance. This study would be concerned with the types of crops, machinery, and animals kept on the farm. This study would also consider the development of agricultural technology and the changes this

development wrought on farming practices. These changes are often manifested in physical changes made to the farm's functional buildings and the Piper Barn reflects this. The purpose of the study would be to provide an information base for an interpretation program which would focus on historic agricultural practices during the barn's period of historic significance.

2. A study of other farmsteads in the vicinity. This study would have several aspects, which include a comparison of sale prices for farms and the buildings and improvements which those sale prices included. The purpose of this comparative study would be to procure some documentary evidence as to when the various buildings on the Piper Farm were built or at least to gain a sense of when those buildings were included in the value of the farm.

   The comparative study of other farmsteads would also yield information about the use and appearance of the buildings on the farm.

Archeological study would include:

1. An investigation of the first story bays, and the floors of additions 1 and 2. This archeological investigation would be done for the purposes of: a) uncovering more sub-surface data regarding the location of addition 2 and the now vanished interior stalls and partitions of the unexplored first story bays and b) uncovering data regarding the potential use of addition 1.

Architectural study would include:

1. A study of the first story features using the data from the above mentioned and other previously conducted studies for the purpose of developing restoration designs for the interior features of the barn.

APPENDIXES

APPENDIX A

GLOSSARY OF TERMS

barn bank wall - retaining wall of coursed rubble which supports the ramp or barn bank providing ground level access to second story

bent - structural framework of wooden beams and posts interconnected with mortise and tenon joints

embrasure - vertical opening in stone wall with interior splayed sides

forebay, foreshoot, overshoot - cantilevered overhang of the wooden second story structure over the stone walled first story

mow floor - the upper or second story of a barn which was used for threshing of grain and storage of field crops

pent roof - shed roof supported on brackets

pintle - iron pin driven into wood post and on which door is hung by hinge

APPENDIX B

PIPER BARN STABLIZATION: CLASS B ESTIMATE BASED ON PRELIMINARY DESIGN, PACKAGE 215: FOR ALTERNATIVE 1

	Specification Divisions	Cost Estimate
1.	General Requirements	$14,500
2.	Site Work	18,700
3.	Concrete	4,800
4.	Masonry	43,300
5.	Metals	19,500
6.	Wood and Plastics	65,500
7.	Thermal and Moisture Protection	22,800
8.	Doors and Windows	8,000
9.	Finishes	3,000
10.	Specialities	5,000
11.	Equipment	5,000
15.	Mechanical	26,200
16.	Electrical	9,300
Contractor's Overhead		39,600
Contractor's Profit		30,300
Contingency		16,500
Total Estimated Net Construction Cost		$332,000

APPENDIX C

MAP AND PHOTOGRAPHS

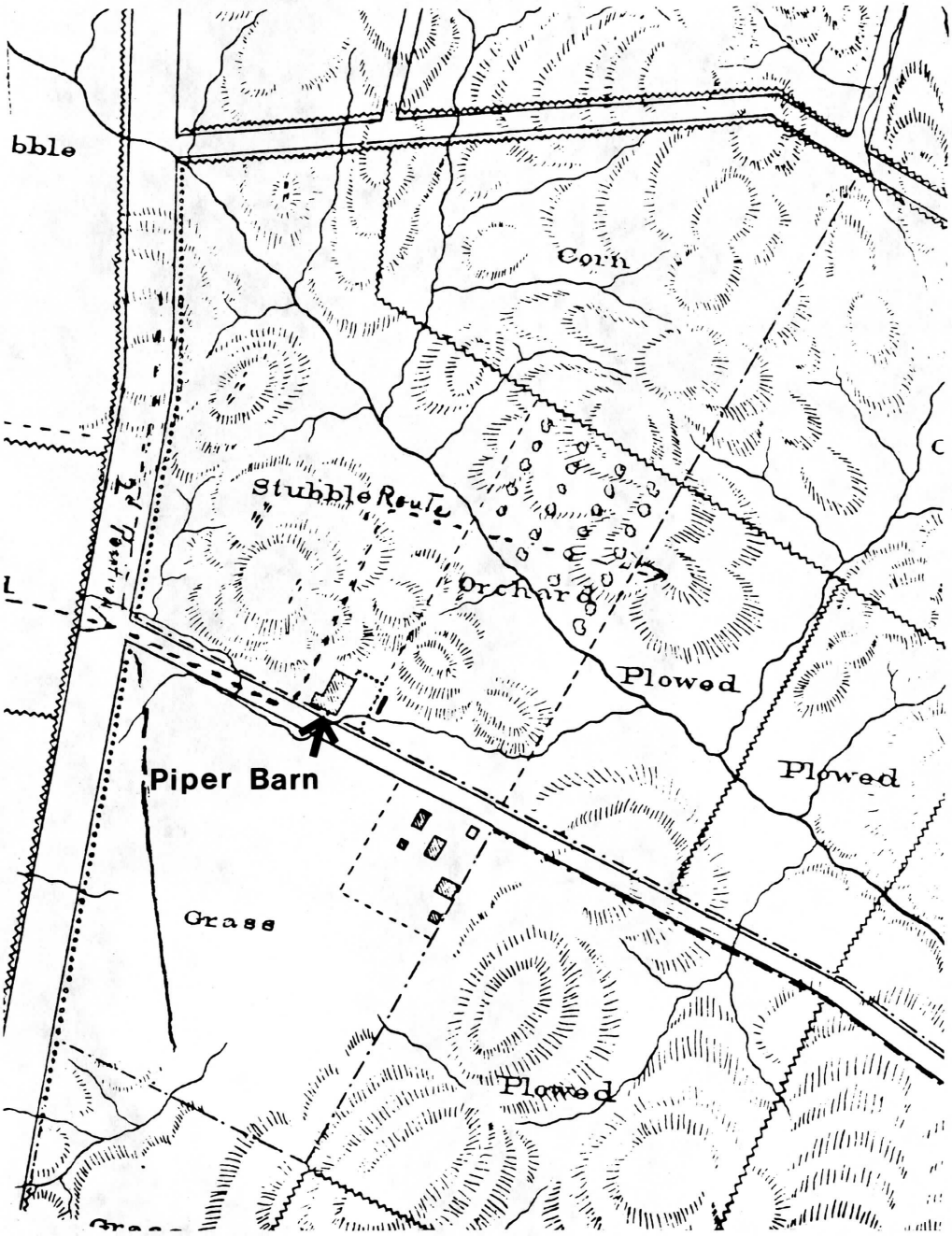


Fig. 1. Mahones Brigade. W. W. Chamberlain sketch. Carman, Ezra Ayres papers, maps for Antietam Battlefield Board (Library of Congress collection).



Fig. 2. Piper Barn from the southeast (photographer unknown, circa 1880, Antietam NB Archives). This view depicts the barn in phase four. Addition 2, as indicated by the pent roof, has been altered and extended. The dormer, from phase five, has not yet been added to the barn.

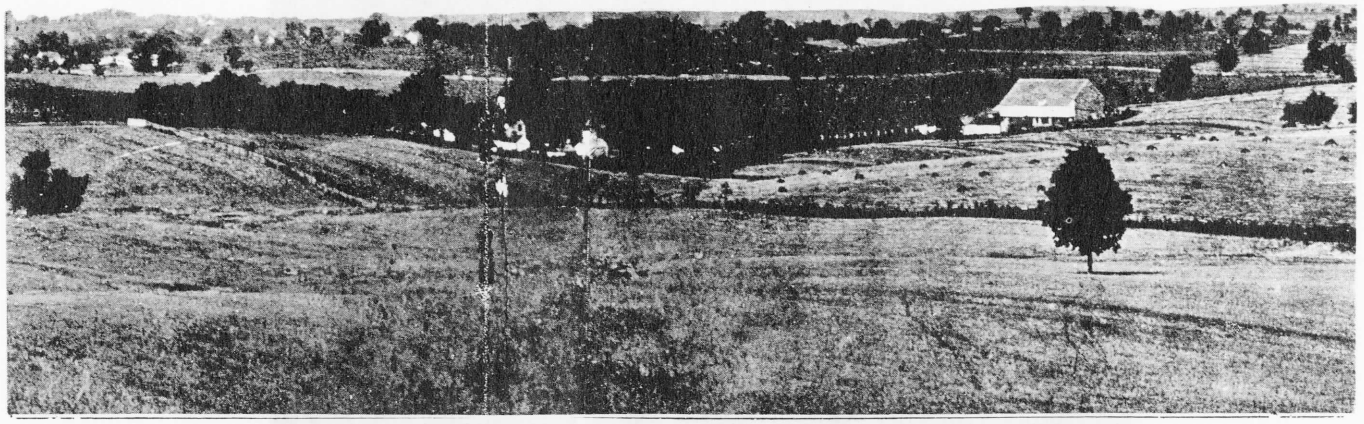


Fig. 3. "Panoramic View From Tower," (Upper illustration). The Battlefield of Antietam, Sharpsburg, Maryland: Oliver T. Reilly, 1906, no pagination, photographer unknown. The photograph, circa 1896-1906, was taken from the Observation Tower. The barn appears in phase four.



Fig. 4. Piper Farmstead from Observation Tower (1981).

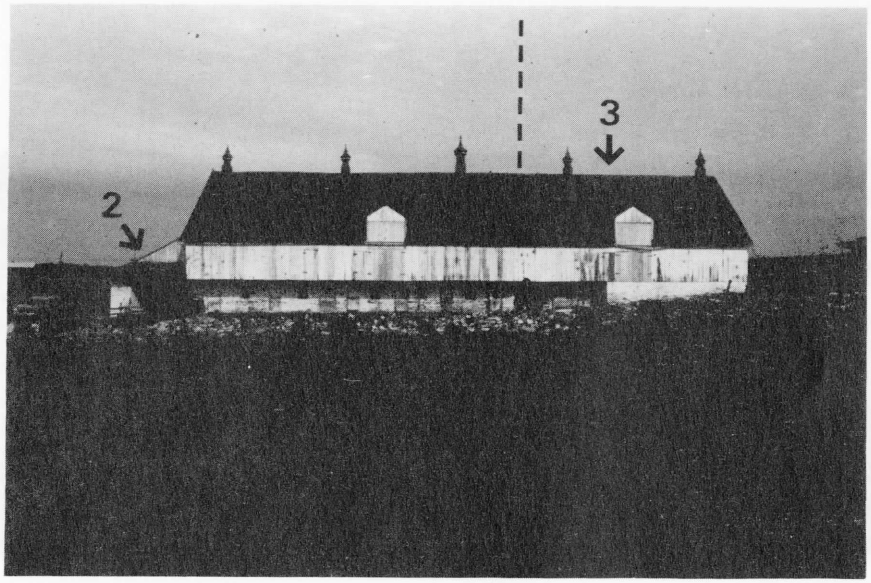


Fig. 5. East elevation (John Marsh, 1979). Addition 2 (left), original barn (center), addition 3 (right).

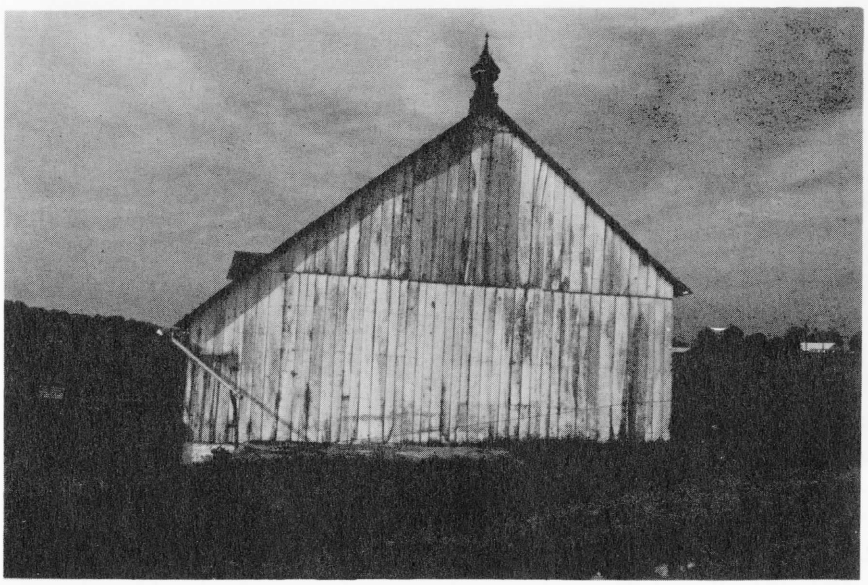


Fig. 6. North Elevation (John Marsh, 1979). Addition 3.

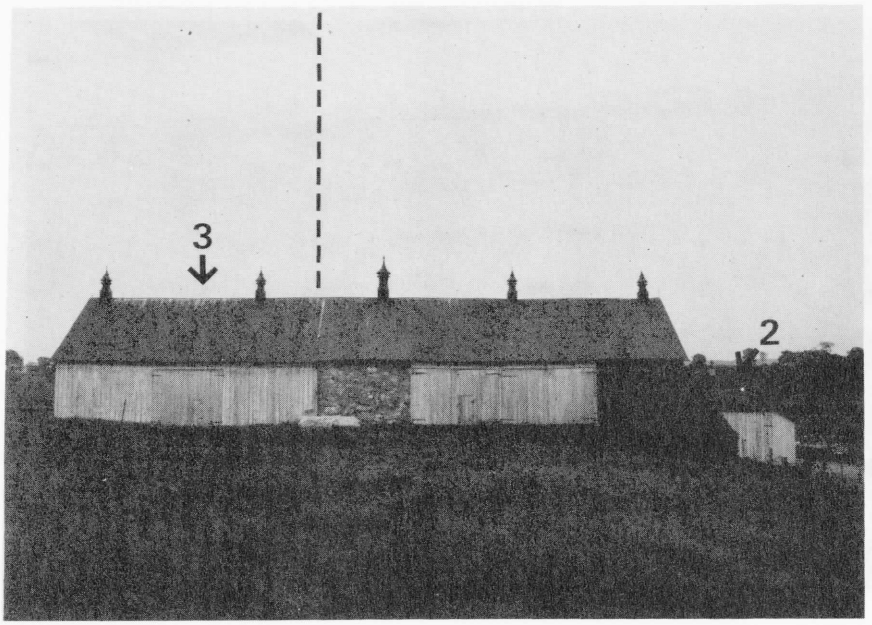


Fig. 7. West Elevation (John Marsh, 1979). Addition 3 (left); original barn (center); addition 1 (deteriorated shed at right); addition 2 (far right).

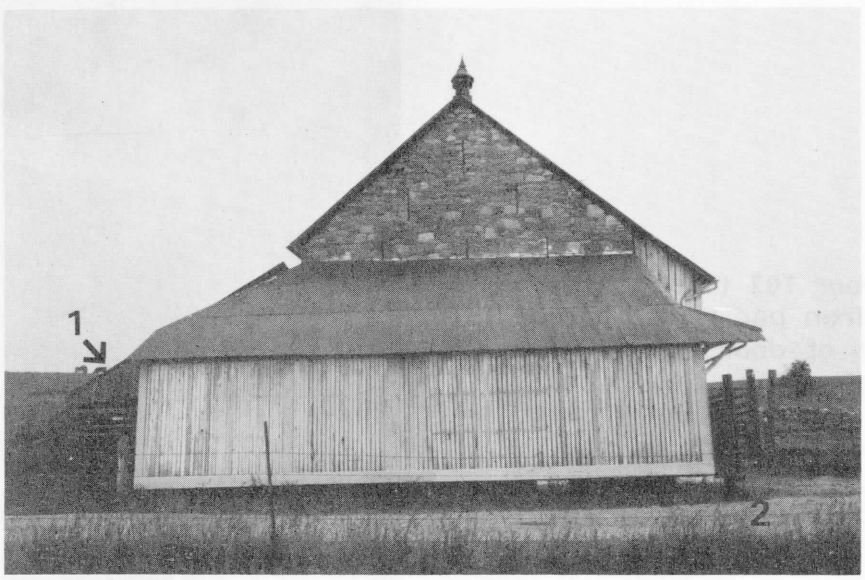


Fig. 8. South Elevation (John Marsh, 1979). Addition 1 (far left background); addition 2 (center foreground); original barn (center background).

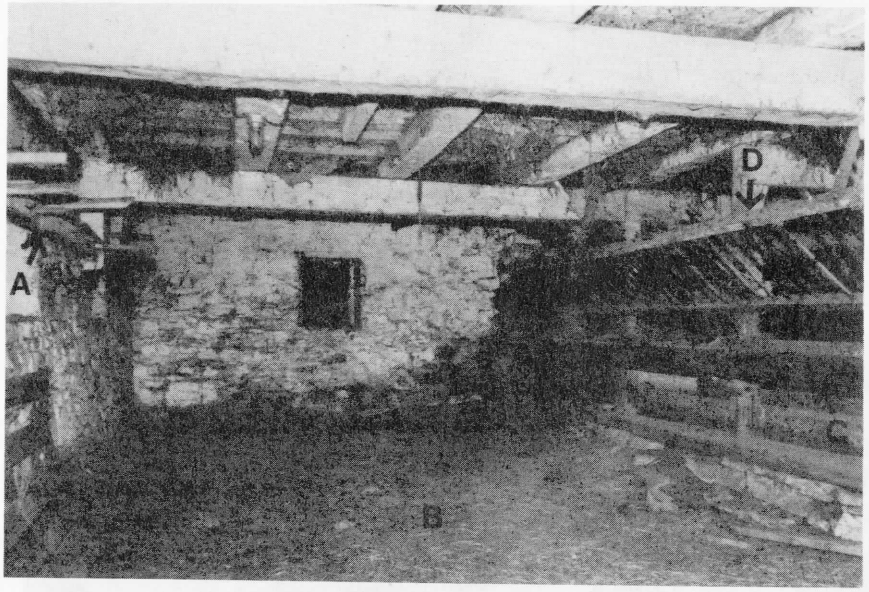


Fig. 9. Bay 1001 (1981). Tack rack (A) (left); former location of horse stalls (B) (center of floor); grain trough (C) and hay rack (D) attached to Bent 11 (right).

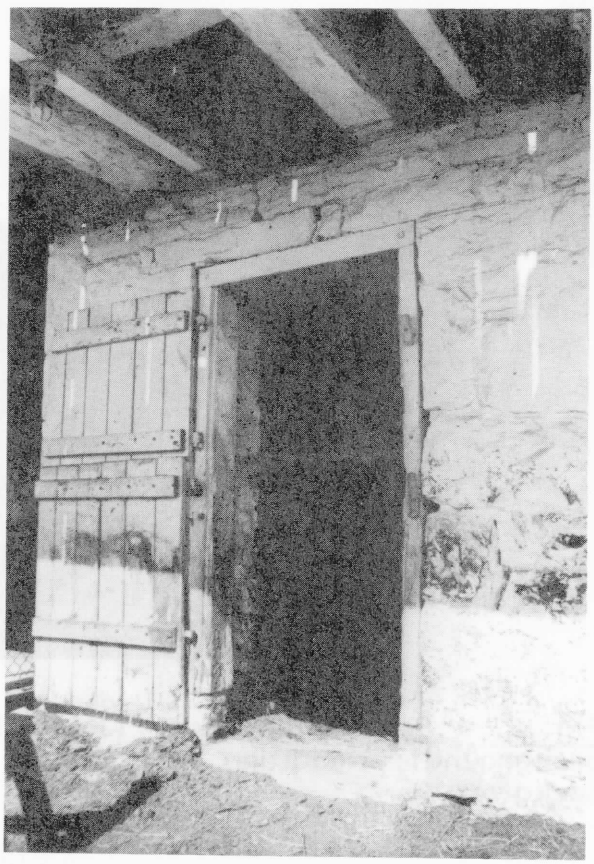


Fig. 10. Door 102 (1981) Dutch doors with iron bar raised across the interior of door jamb. Note lowering of stone sill below bottom of wooden door frame.

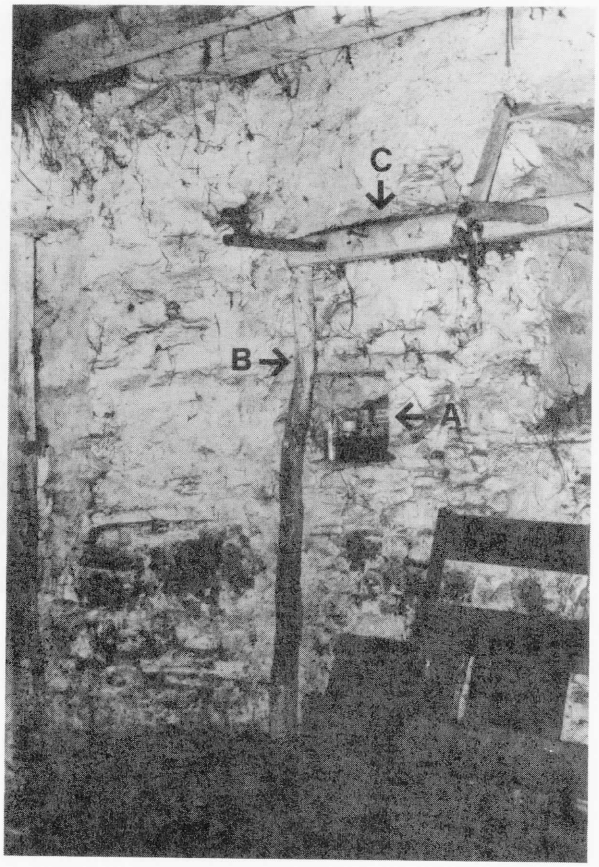


Fig. 11. Niche (A), bay 1001 (1981). View of southeast corner of bay. Note adjacent post (B) supporting end of tack rack (C).

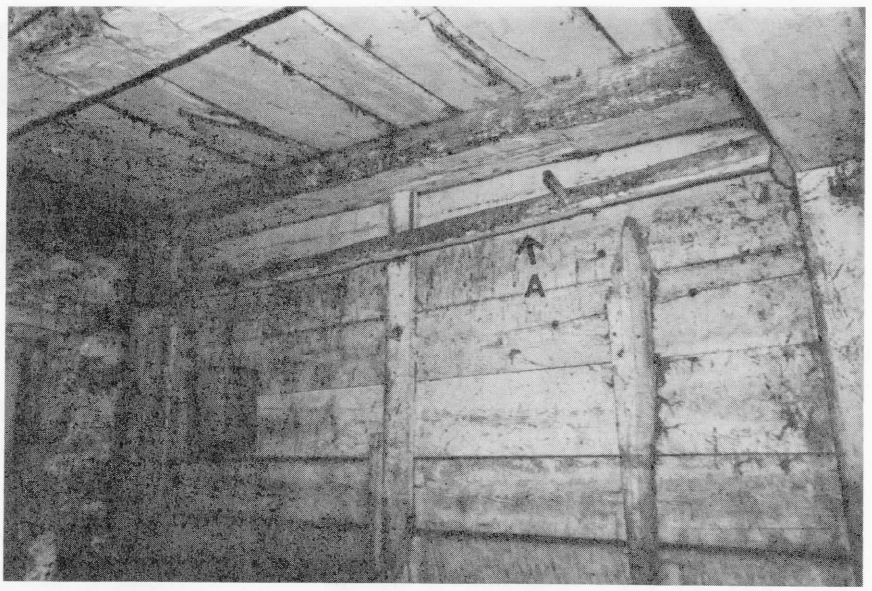


Fig. 12. Peg Board (A), bay 1004 (1981).

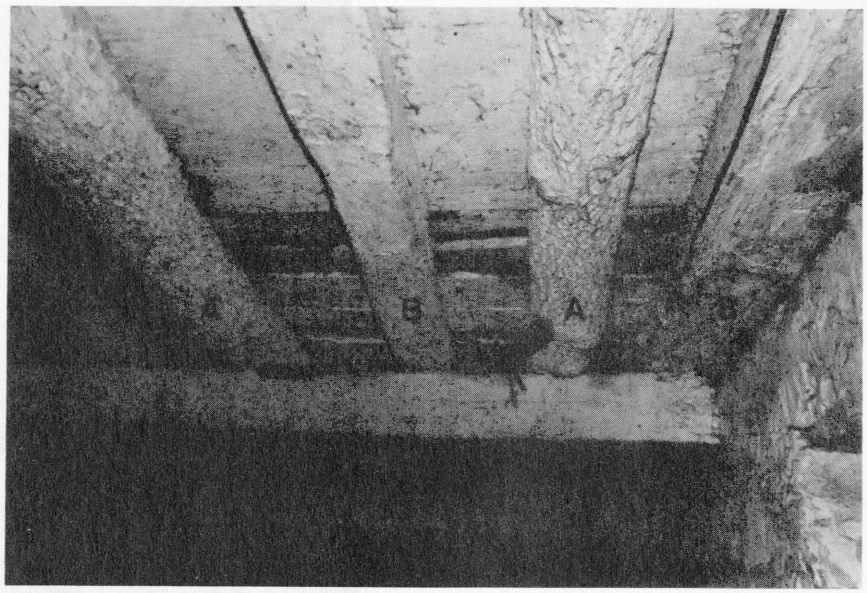


Fig. 13. Reinforcing beams, bay 1007 (1981). Bark covered logs (A) were added between original floor joists (B) to support weight of granary.

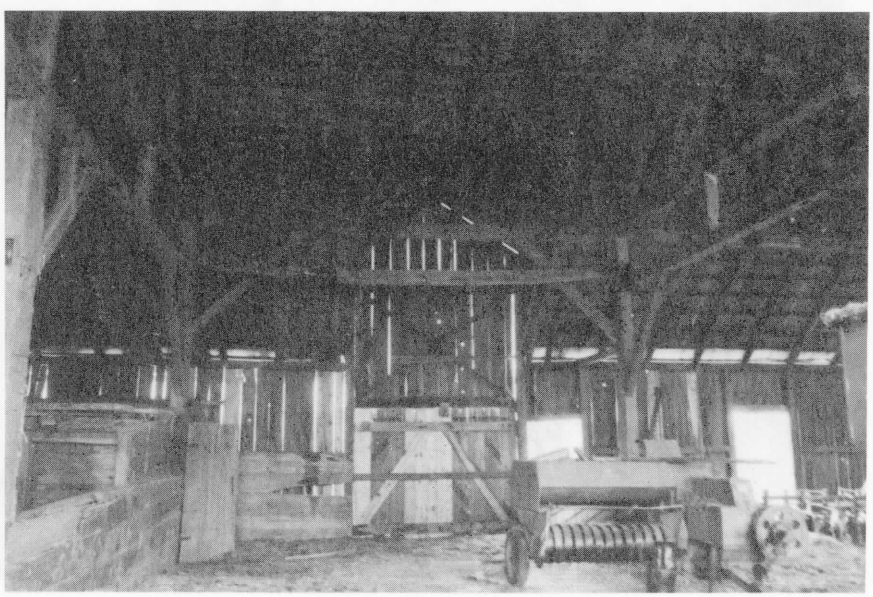


Fig. 14. Partition wall at Bent 23 at left; dormer structure at center (John Marsh, 1979).

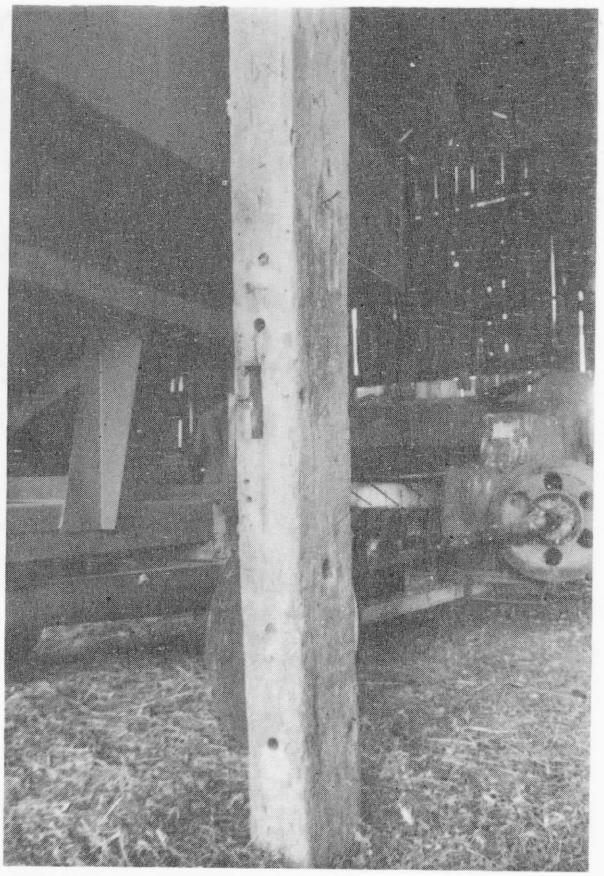


Fig. 15. Evidence of partition wall, bent 22, (John Marsh, 1979). View of empty mortise in center post of bent 22.

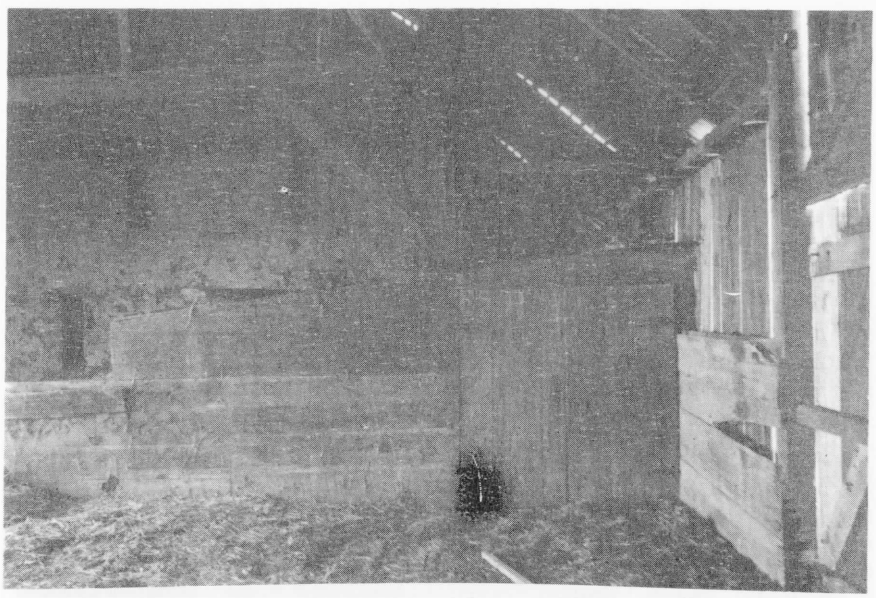


Fig. 16. Granary, bay 2004 (John Marsh, 1979). South wall of granary.

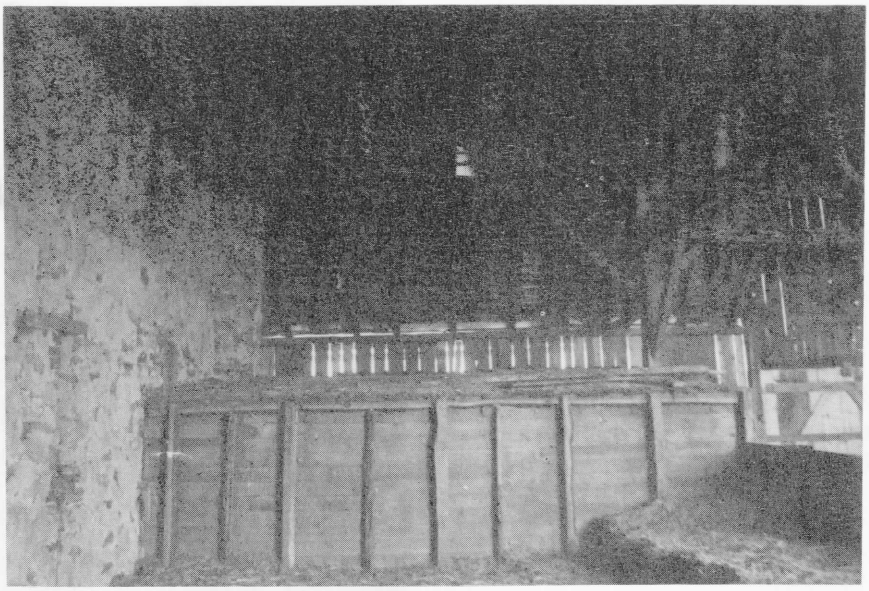


Fig. 17. Granary, bay 2004 (John Marsh 1979). West wall of granary.



Fig. 18. Addition 1 from the southwest (1981).



Fig. 19. Addition 1 from the northwest (1981).

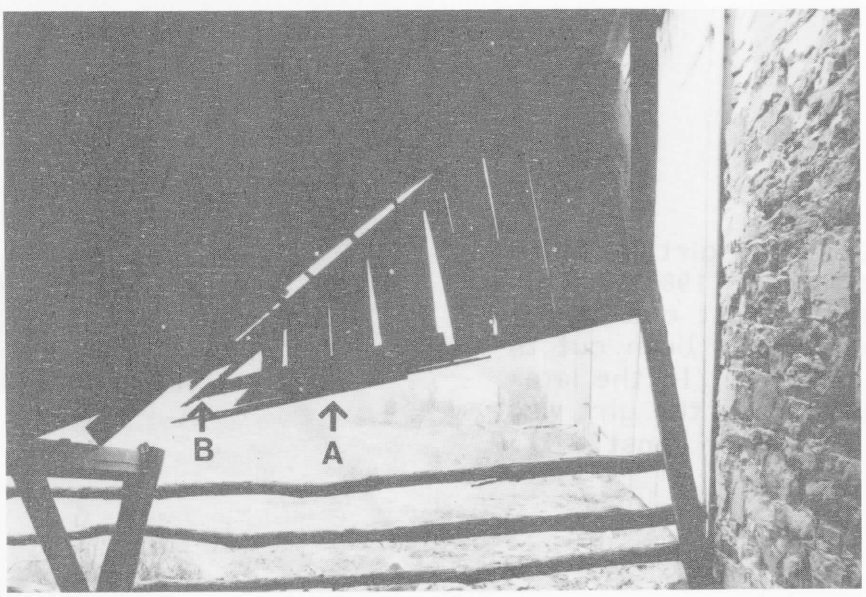


Fig. 20. Interior view of the north wall of addition 1 (1981). Note the lower girt (A) with a second girt (B) fastened to its upper surface and extended to its left in order to support the roof rafters.

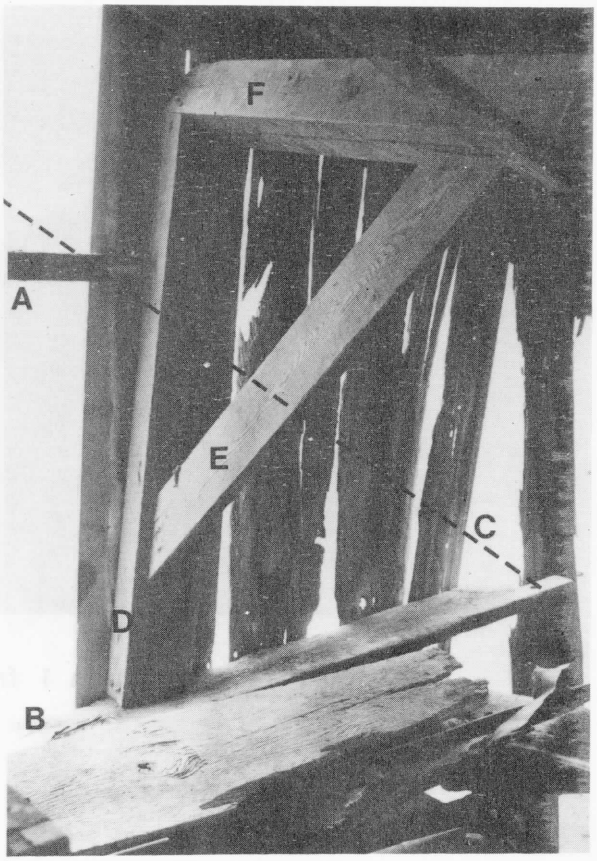


Fig. 21. Interior of south wall of addition 1 (1981). This view depicts the earlier and later structural systems. The girt (A) and the plate (B) are elements from the earlier structural system and were joined to a now vanished rafter (C) (dashed line) by mortise and tenon joints. The heavier post (D), bracket (E), and purlin (F) were added into the earlier system and are fastened by nails to one another and the earlier members.

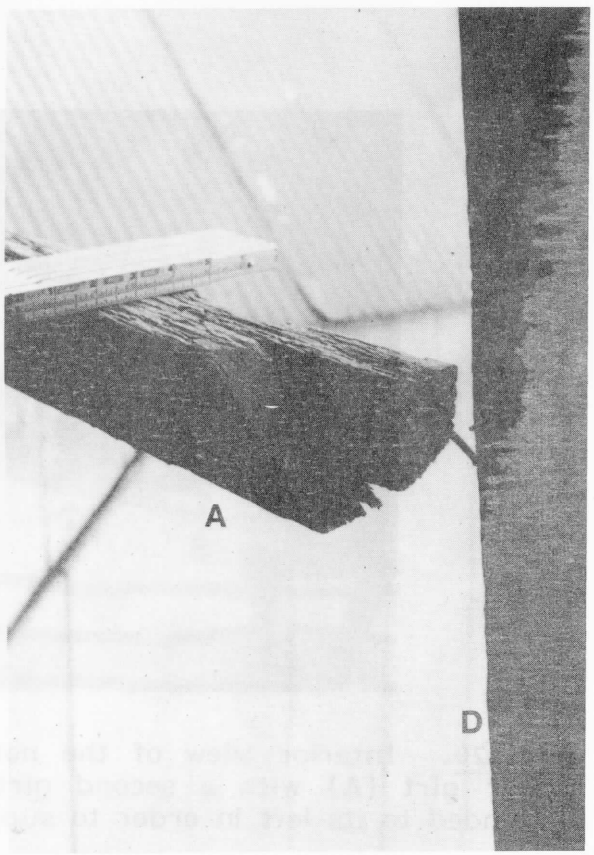


Fig. 22. Detail of girt in south wall of addition 1 (1981). This view shows the west end of the girt (A) which had been cut to connect to a rafter. In the later alteration/extension, the girt was nailed to the later post (D).

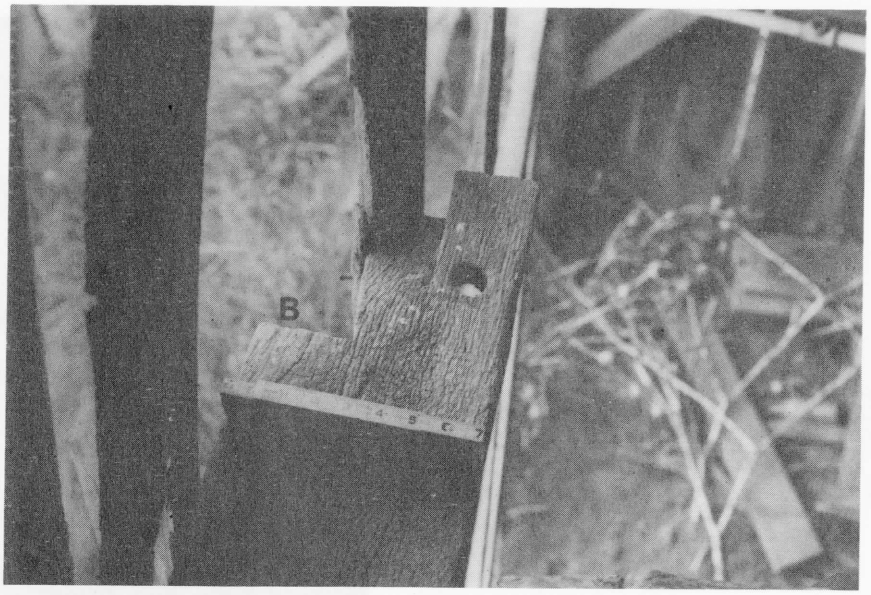


Fig. 23. Detail of plate in south wall of addition 1 (1981). This view shows the west end of the plate (B) with the cuts and peg hole made to receive members from the earlier structural system. In the later system, these details had no function but survived intact.



Fig. 24. Addition 2 from the southeast (1981).



Fig. 25. Wagon shed bent (A) set on stone piers (B) against south gable wall of original barn (1981).

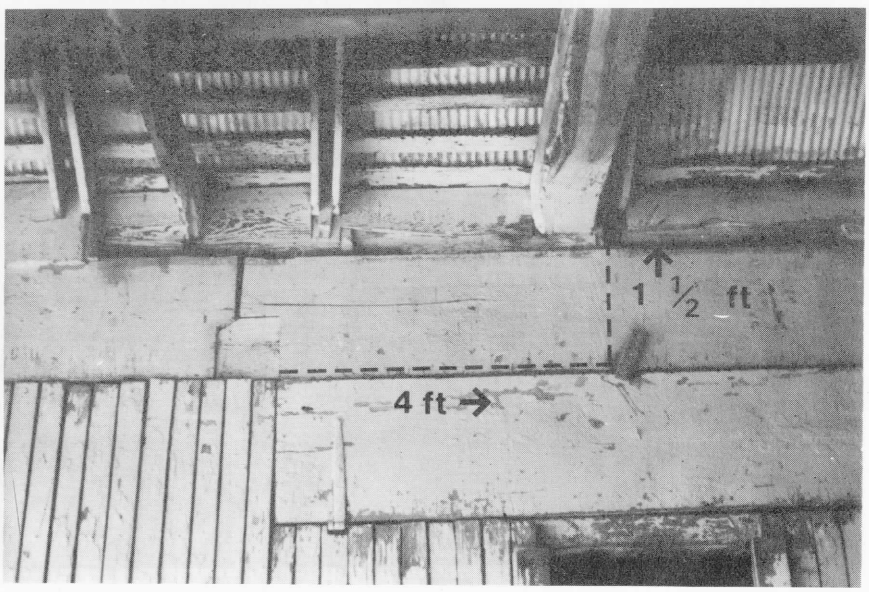


Fig. 26. North wall of corncrib (1981). View depicts the displacement of the tie beams westward by 4' and upward by 1½'.

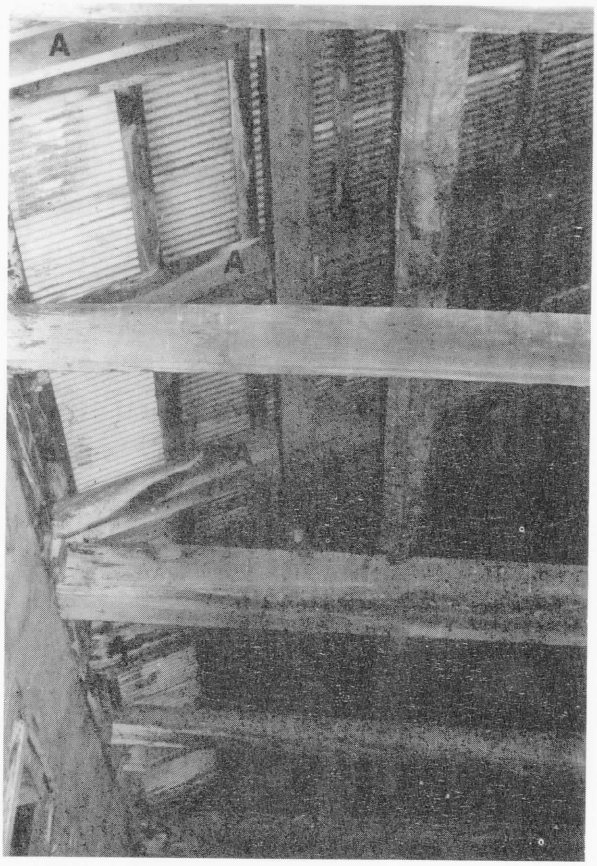


Fig. 27. View of rafter extension (A) in wagon shed roof (1981).

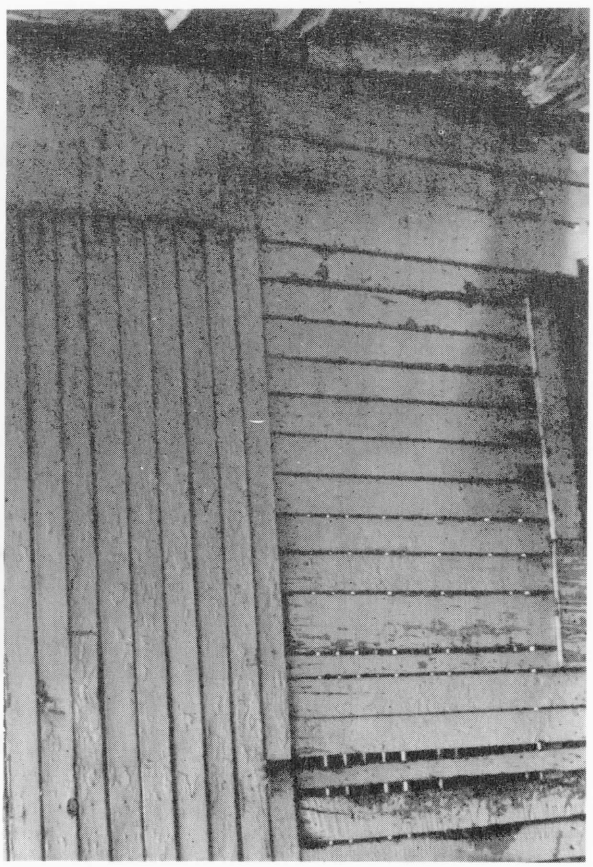


Fig. 28. Detail of corncrib at addition at west end, (1981). Note the change in the direction of the slating from vertical (left) to horizontal (right).



Fig. 29. Wagon shed hoist, lower log (A) (1981).

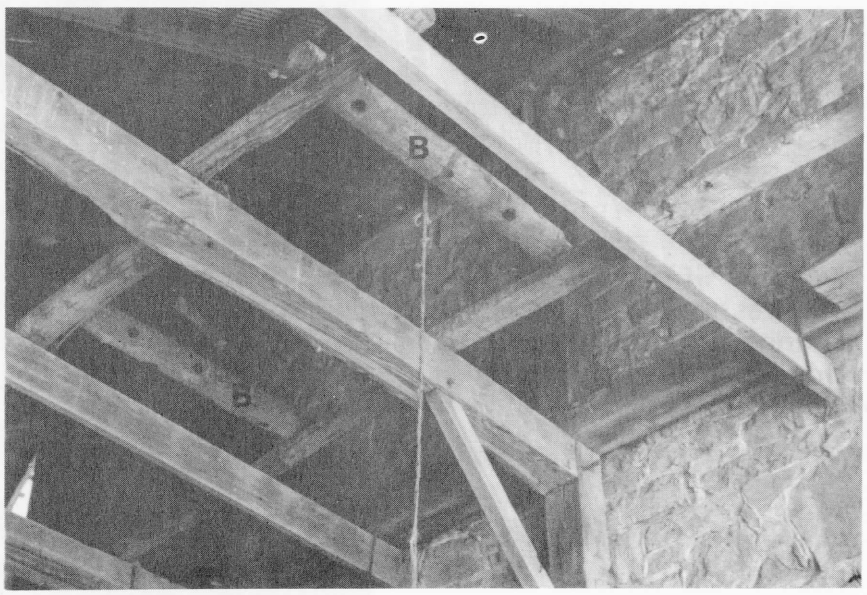


Fig. 30. Wagon shed hoist, upper logs (B).

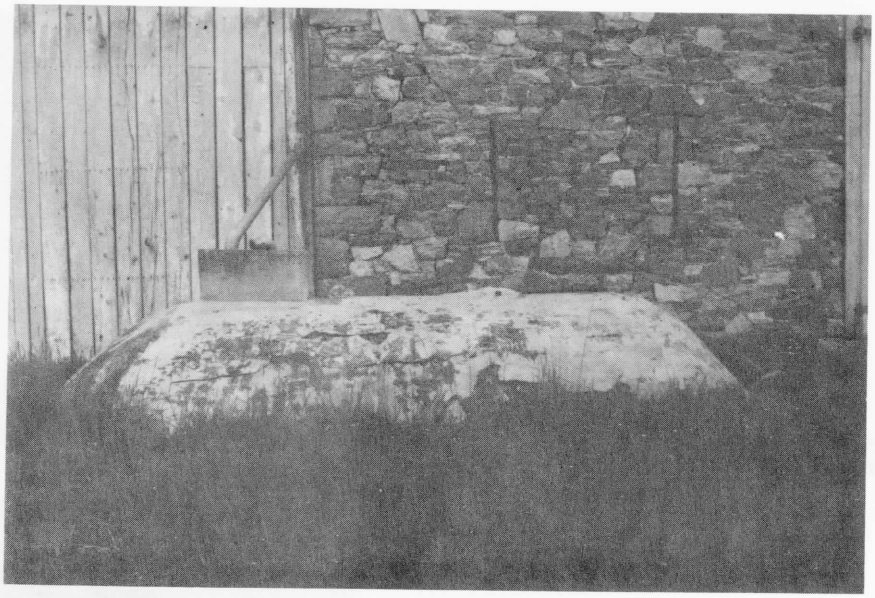


Fig. 31. Cistern 1 from the west (John Marsh, 1979).



Fig. 32. Bent 24, addition 3 (John Marsh, 1979). Bent stands against the formerly exposed north gable wall of the original barn.



Fig. 33. Ventilator at north end of barn (John Marsh, 1979).

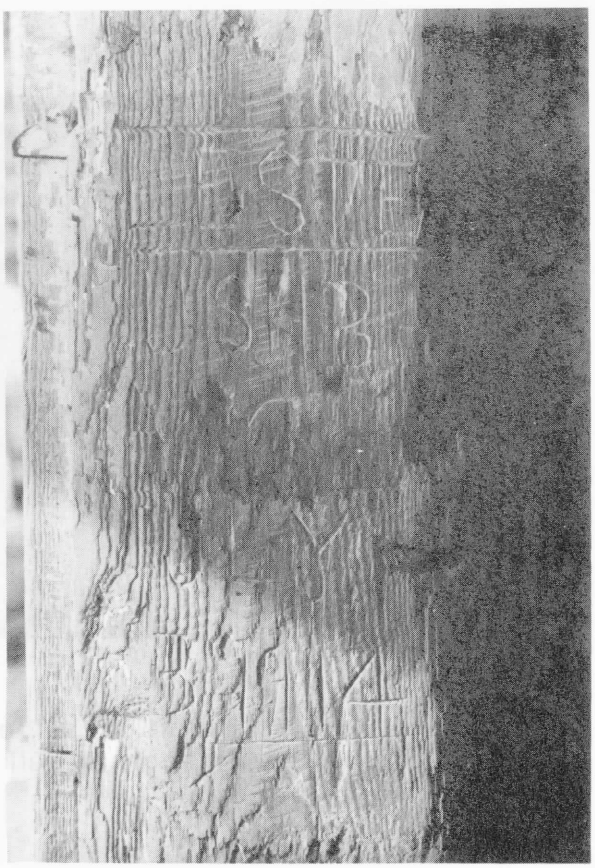


Fig. 34. Date inscription in southeast post, first story, addition 3 which reads: "Lester, USB, _____, __uly 3, 1914," (1981).

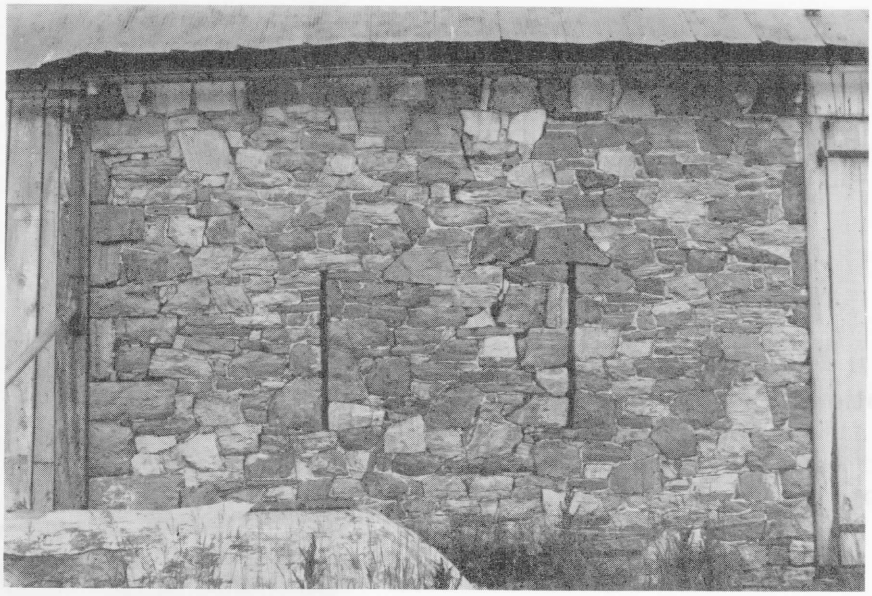


Fig. 35. North end of west elevation of original barn (1981).



Fig. 36. North stone gable wall of original barn at west end, bay 1008 (1981). Lighter upper area had been exposed and darker lower area had been covered prior to construction of addition 3.



Fig. 37. View of north end of foundation wall, addition 3 (1981). The former height of the ground is marked by the darker band of masonry.



Fig. 38. Stonework failure, west foundation wall, addition 3 (1981).



Fig. 39. Decayed rafter plate over door 208 (1981).

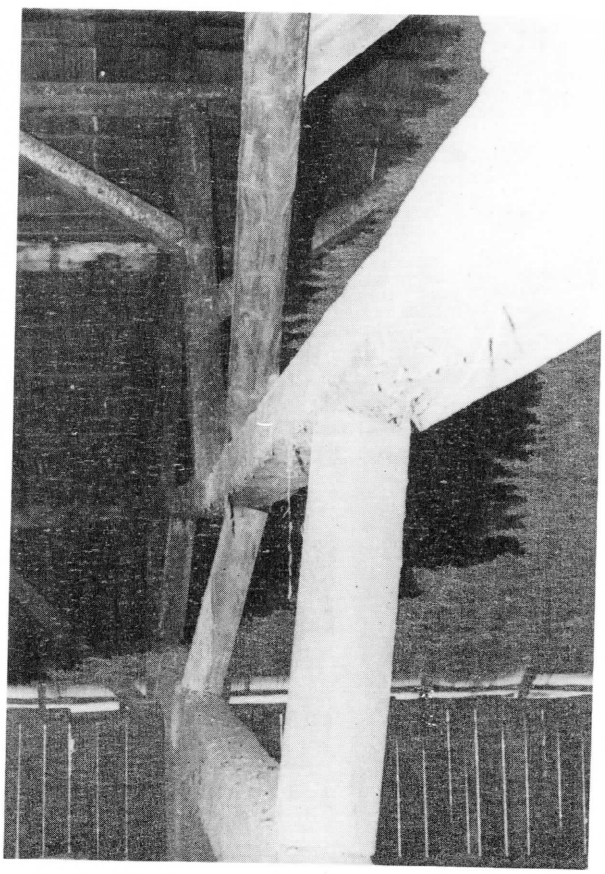


Fig. 40. Deflected top tie beam of bent 21 (1981).



Fig. 41. Broken joints at west post of bent 22 (1981)

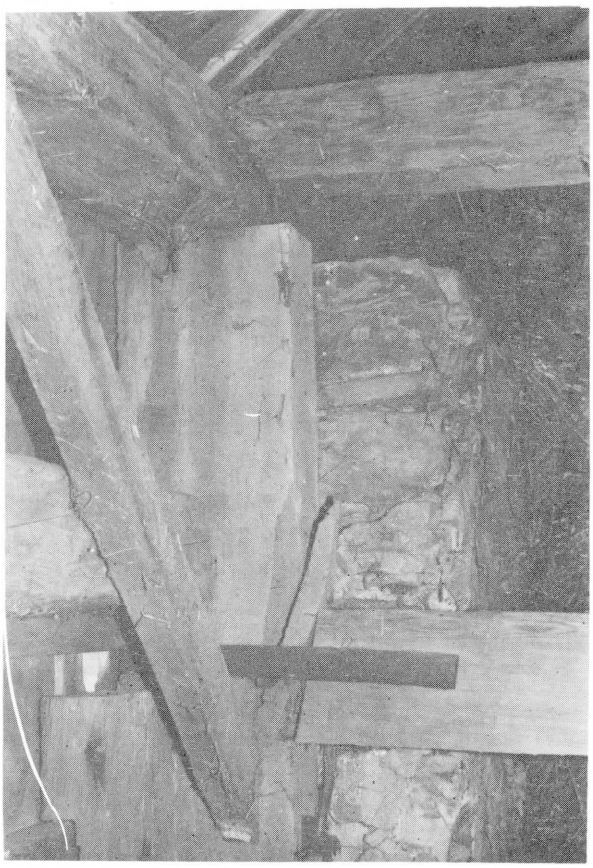


Fig. 42. Broken joints at west post of Bent 23 (1981).

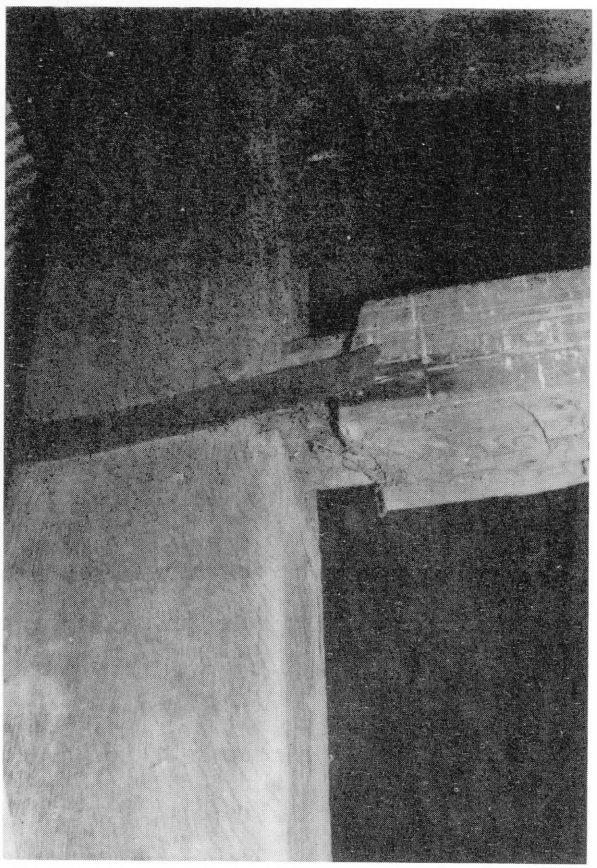


Fig. 43. Broken joints at east post of bent 21 (1981). The attempt to restrain the movement of the lower tie beam and the east post by attaching an iron strap has failed.

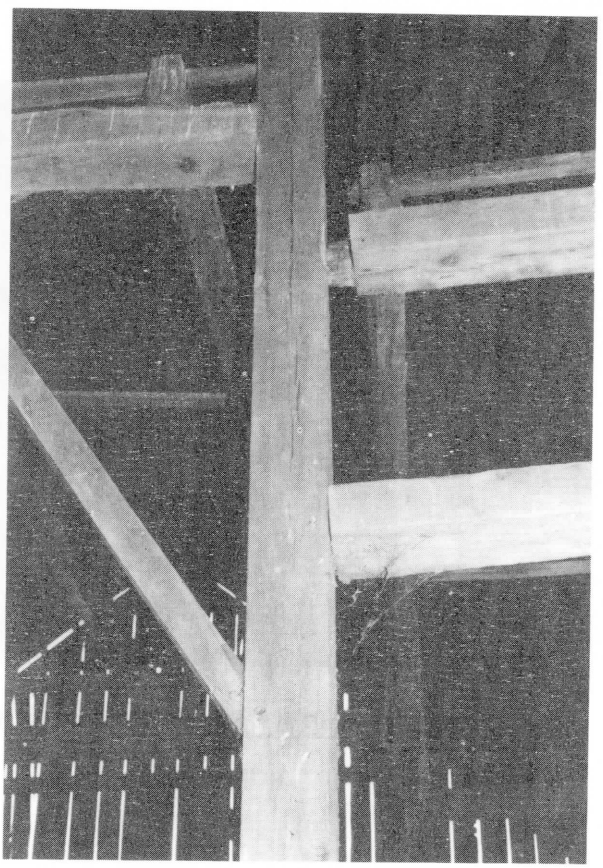


Fig. 44. Broken joints at east purlin post of bent 25 (1981). The overloading of the upper story and the removal of support posts from the floor structure beneath this bent have resulted in the downward movement of the posts which broke the joints.

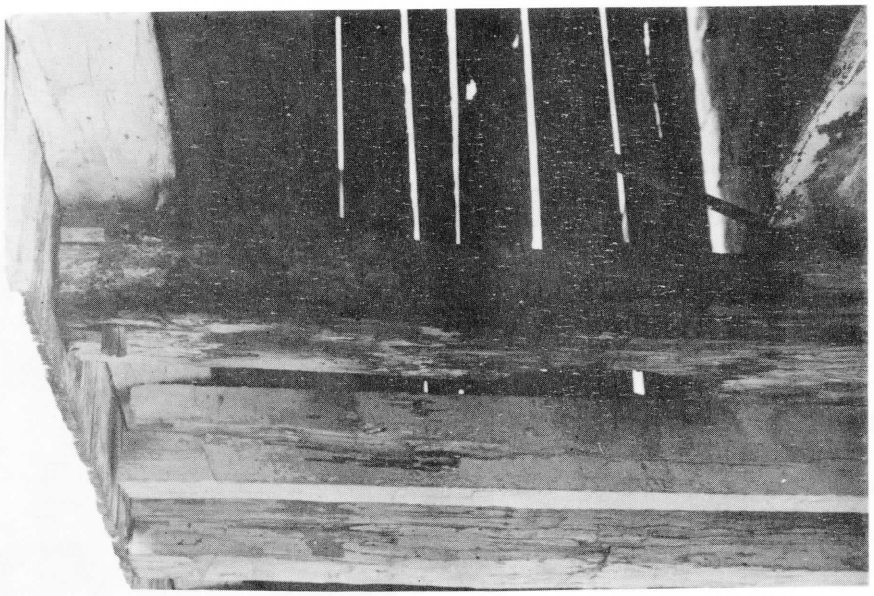


Fig. 45. Deteriorated floor joists at forebay end of bay 2001 (1981).



Fig. 46. Insect attack of bent members (1981).

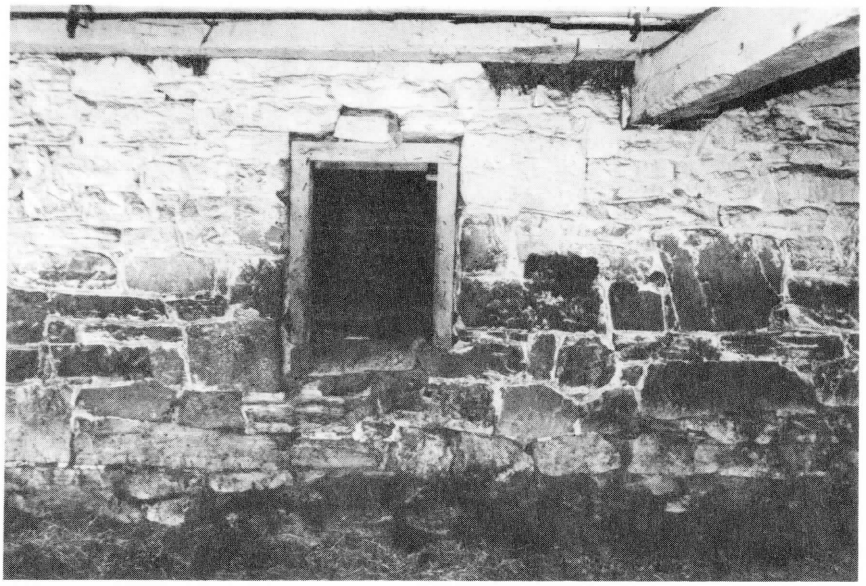


Fig. 47. Deteriorated ventilator, north stone gable, bay 1008 (1981).

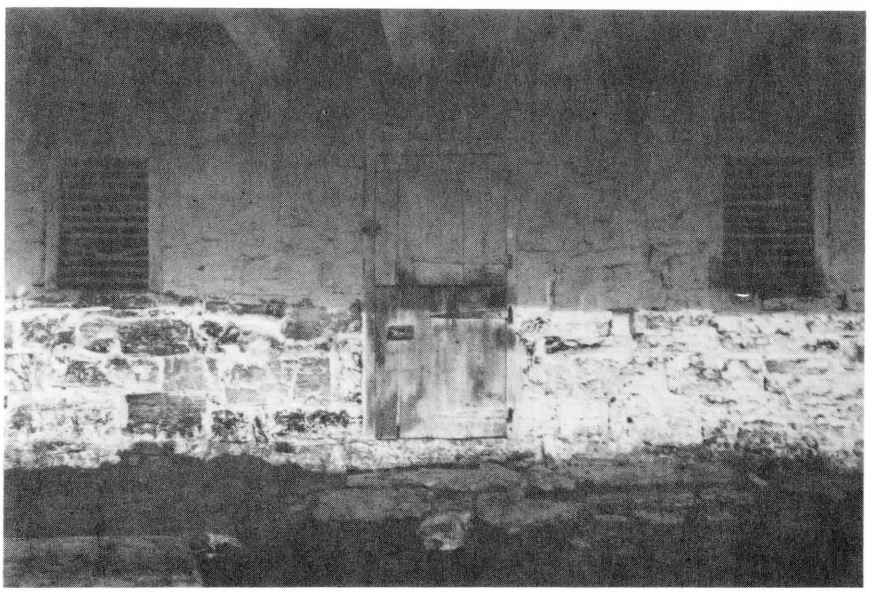


Fig. 48. Dutch door in east wall of ground story (1981).

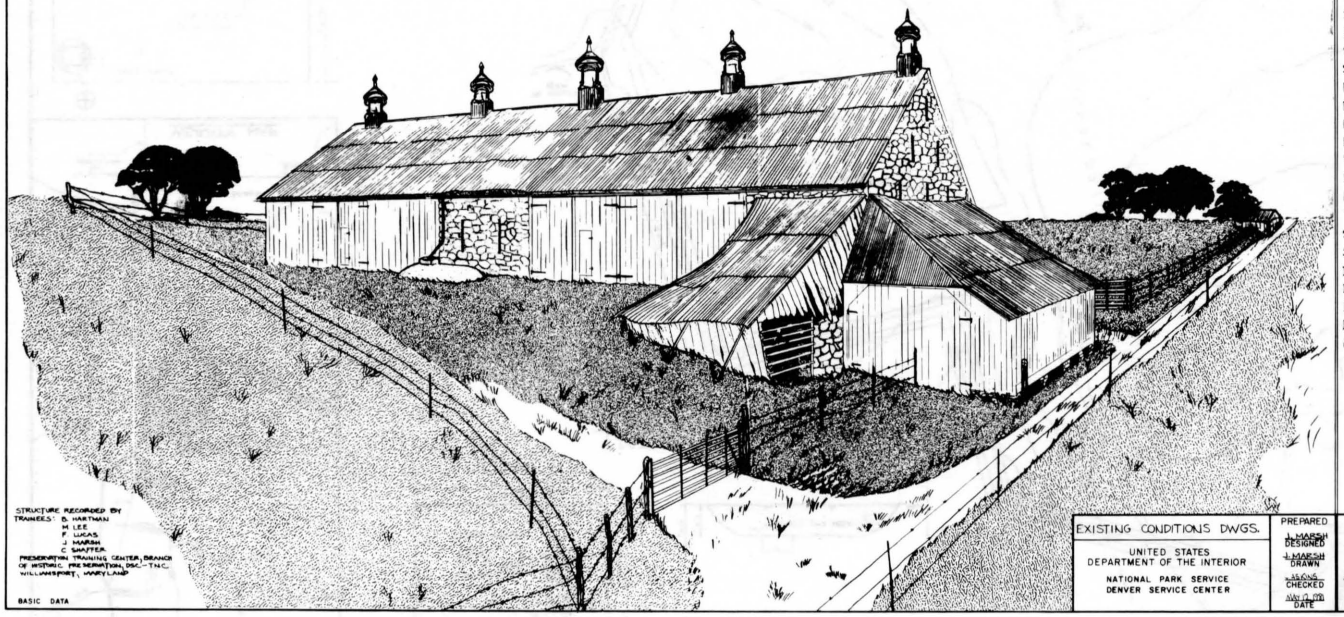
APPENDIX D

EXISTING CONDITION DRAWINGS

THE PIPER BARN

ANTIETAM NATIONAL BATTLEFIELD

SHARPSBURG, MARYLAND



STRUCTURE RECORDED BY TRAINEES: B. HARTMAN
H. LEE
F. LUCAS
J. MARSH
C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, INC.—TNC. WILLIAMSPORT, MARYLAND

BASIC DATA

EXISTING CONDITIONS DWGS.

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

PREPARED
J. MARSH
DESIGNED
J. MARSH
DRAWN
JASONS
CHECKED
AUG 1978
DATE

NATIONAL PARK SERVICE
Department of the Interior

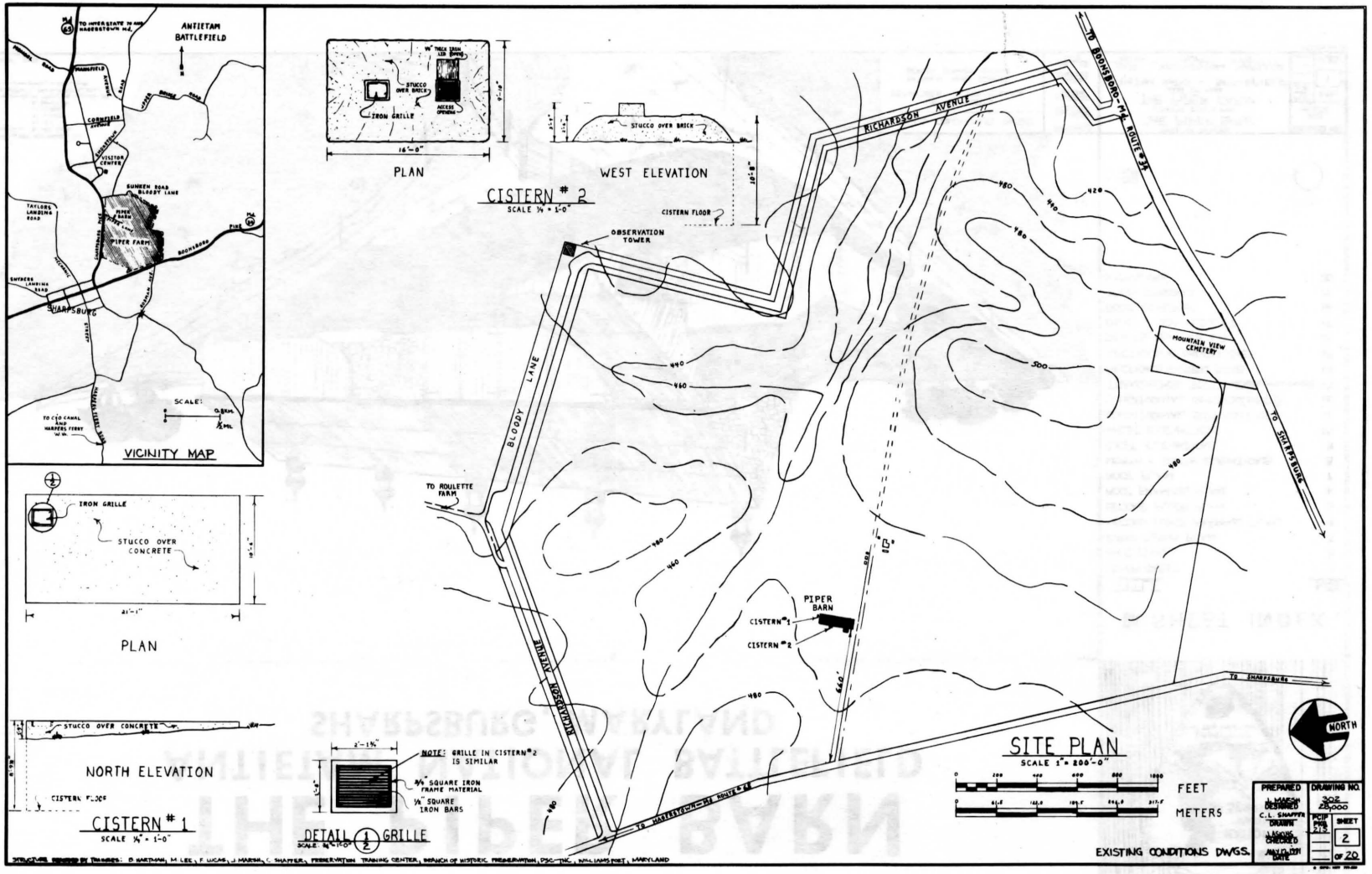
SHEET INDEX

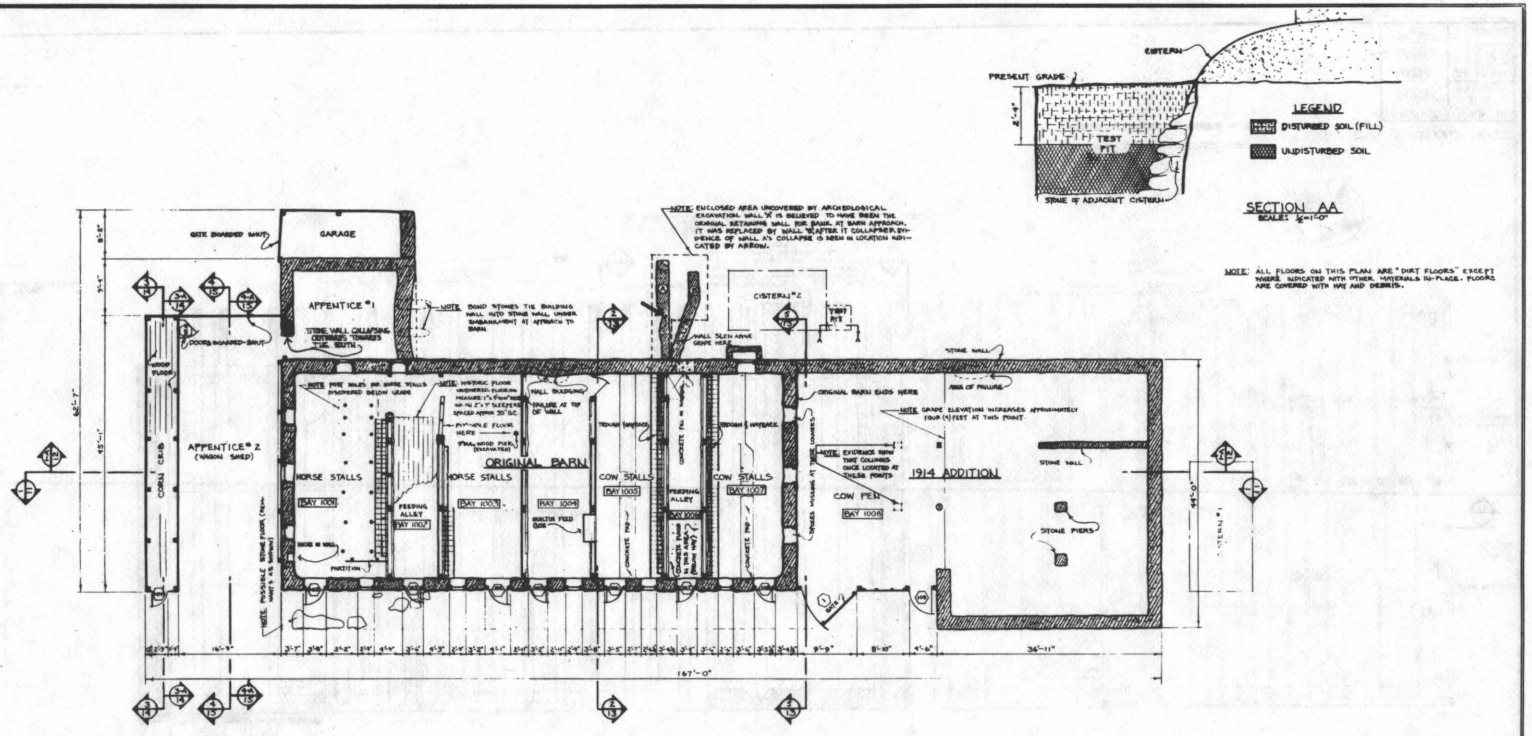
TITLE	NO.
COVER SHEET	1
SITE PLAN	2
FIRST FLOOR PLAN	3
SECOND FLOOR FRAMING PLAN	4
SECOND FLOOR PLAN	5
ROOF FRAMING PLAN	6
ROOF PLAN	7
NORTH & SOUTH ELEVATIONS	8
EAST ELEVATION	9
WEST ELEVATION	10
LONGITUDINAL SECTION (EAST)	11
LONGITUDINAL SECTION (WEST)	12
TRANSVERSE SECTIONS (BRG. BARN & 19TH ADD.)	13
SECTIONS @ CORN CRIB	14
SECTIONS @ WAGON SHED	15
BENTS, NOS 1, 2, & 3	16
BENTS, NOS 4, 5, 6 & 7	17
DOOR SCHEDULE	18
DOOR SCHEDULE	19
HARDWARE	20

TITLE OF DRAWING
THE PIPER BARN
LOCATION WITHIN PARK
THE PIPER FARM
NAME OF PARK
ANTIETAM NATIONAL BATTLEFIELD
NCR — REGION
WASHINGTON — COUNTY
MARYLAND — STATE

DRAWING NO.
302
25,000
PCTP
PKG
215
SHEET
1
OF 20

GPO 1974 678 709

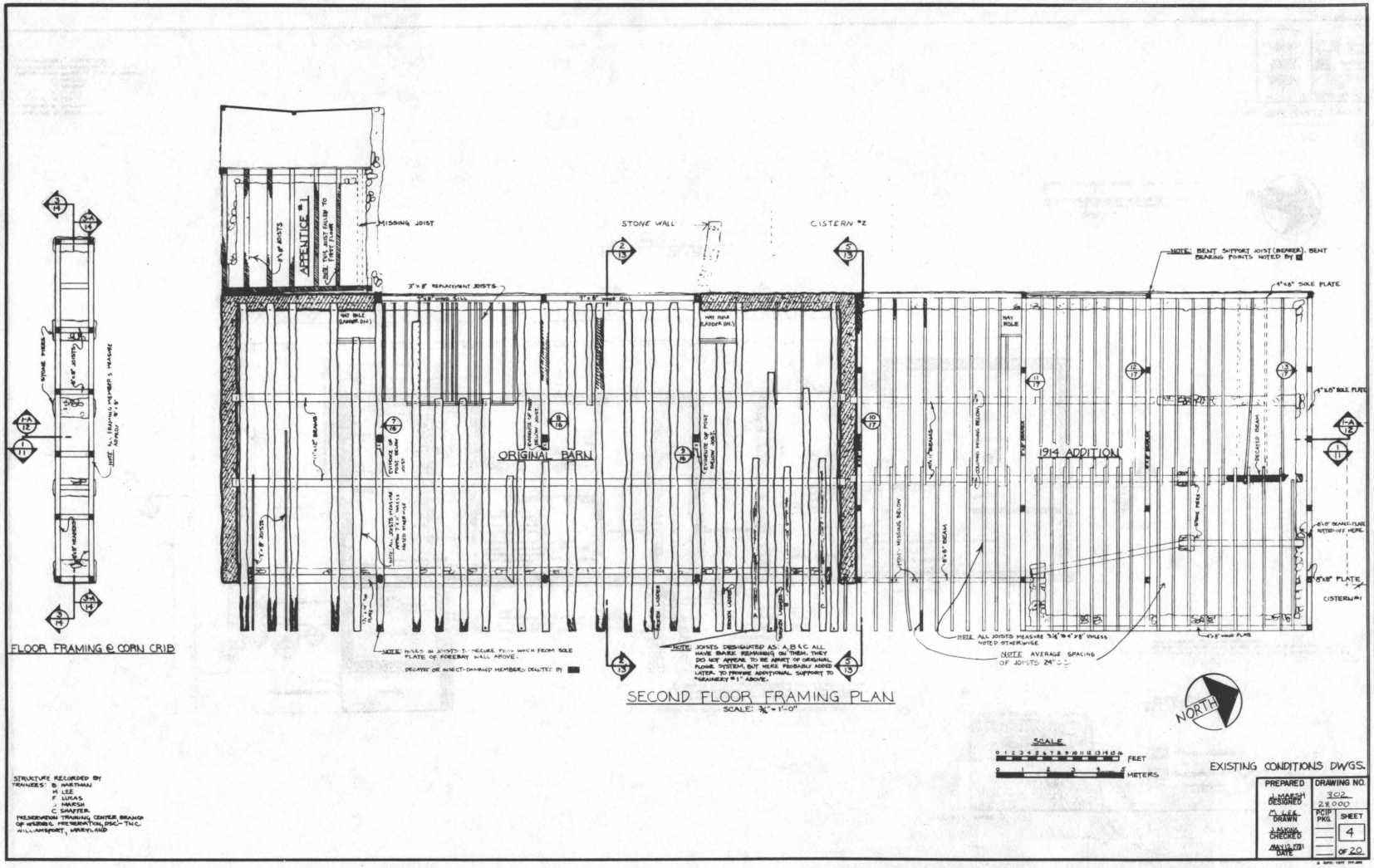

ANTIETAM BATTLEFIELD
SUNKEN ROAD BLOODY LANE
PIPER FARM
SHARPSBURG
TAYLORS LANDING ROAD
ENTRANCE LANDING ROAD
BOONSBORO ROAD
SCALE:
VICINITY MAP
IRON GRILLE
STUCCO OVER CONCRETE
21'-1"
PLAN
STUCCO OVER CONCRETE
CISTERN FLOOR
NORTH ELEVATION
CISTERN # 1
SCALE 1/4" = 1-0"
STUCCO OVER BRICK
IRON GRILLE
ACCESS OPENING
16'-0"
PLAN
STUCCO OVER BRICK
CISTERN FLOOR
WEST ELEVATION
CISTERN # 2
SCALE 1/4" = 1-0"
2'-1 3/4"
NOTE: GRILLE IN CISTERN #2 IS SIMILAR
3/4" SQUARE IRON FRAME MATERIAL
1/2" SQUARE IRON BARS
DETAIL 1/2 GRILLE
SCALE 1 1/2" = 1'-0"
TO BOONSBORO - MD. ROUTE #34
RICHARDSON AVENUE
OBSERVATION TOWER
MOUNTAIN VIEW CEMETERY
TO SHEPHERDSTOWN
BLOODY LANE
TO ROULETTE FARM
MIDDLETOWN - PIPER FARM ROAD
PIPER BARN
CISTERN #1
CISTERN #2
TO SHARPSBURG
TO HAGERSTOWN - MD. ROUTE #65
NORTH
SITE PLAN
SCALE 1" = 200'-0"
FEET
METERS
STRUCTURE RECORDED BY TRAINEES: D. HARTMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER, PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC-TIC, WILLIAMSPORT, MARYLAND
EXISTING CONDITIONS DWGS.
PREPARED
DRAWING NO.
SHEET
2
of 20



STRUCTURE RECORDED BY TRAINEES: B HUFFMAN
H LEE
F LUCAS
L MARSH
C SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC--TNC
WILLIAMSPORT, MARYLAND

EXISTING CONDITIONS DWGS.

PREPARED	DRAWING NO.
J. MARSH DESIGNED	302 28,000
J. MARSH DRAWN	PCTP PWR 213 SHEET 3
J. MARSH CHECKED	OF 20
MAY 0 1981 DATE	



SECOND FLOOR FRAMING PLAN

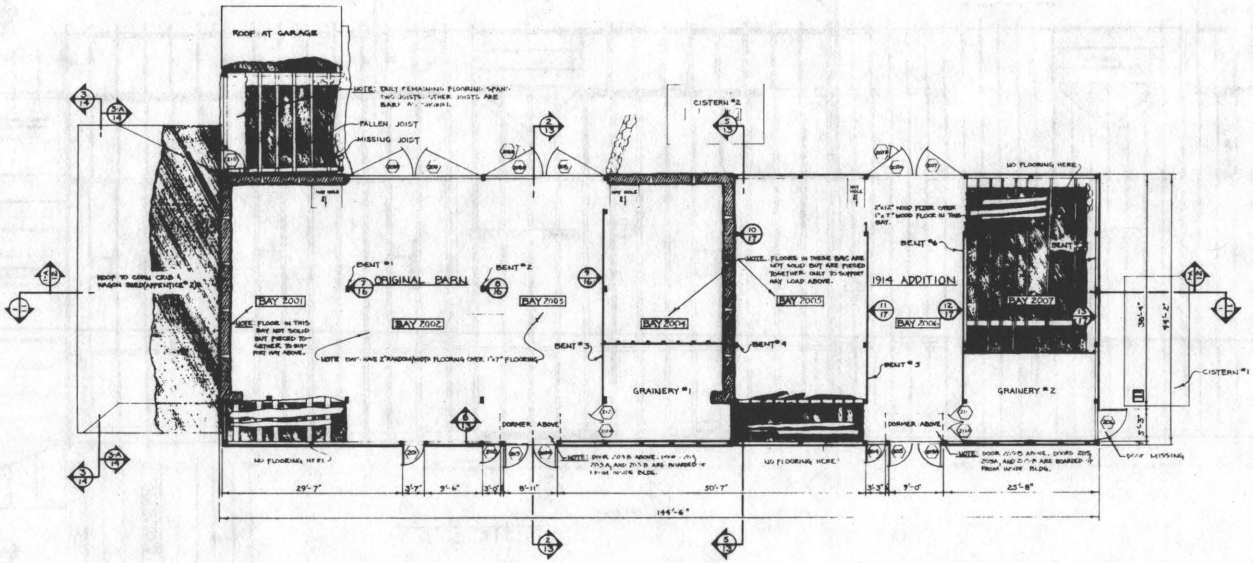
SCALE: 3/8" = 1'-0"

FLOOR FRAMING @ CORN CRIB

STRUCTURE RECORDED BY TRAINEES: B. HARTMAN
M. LEE
F. LUKAS
J. MAHESH
C. SHAFFER.
PRESERVATION TRAINING CENTER BRANCH OF HISTORIC PRESERVATION, DSC.- TNC. WILLIAMSPORT, MARYLAND

EXISTING CONDITIONS DWGS.

PREPARED	DRAWING NO.
LAYOUT DESIGNED	302
J.L.E.A. DRAWN	2X000
CHECKED	PCIP PKG.
MAY 12, 1981 DATE	SHEET 4 OF 20



SECOND FLOOR PLAN
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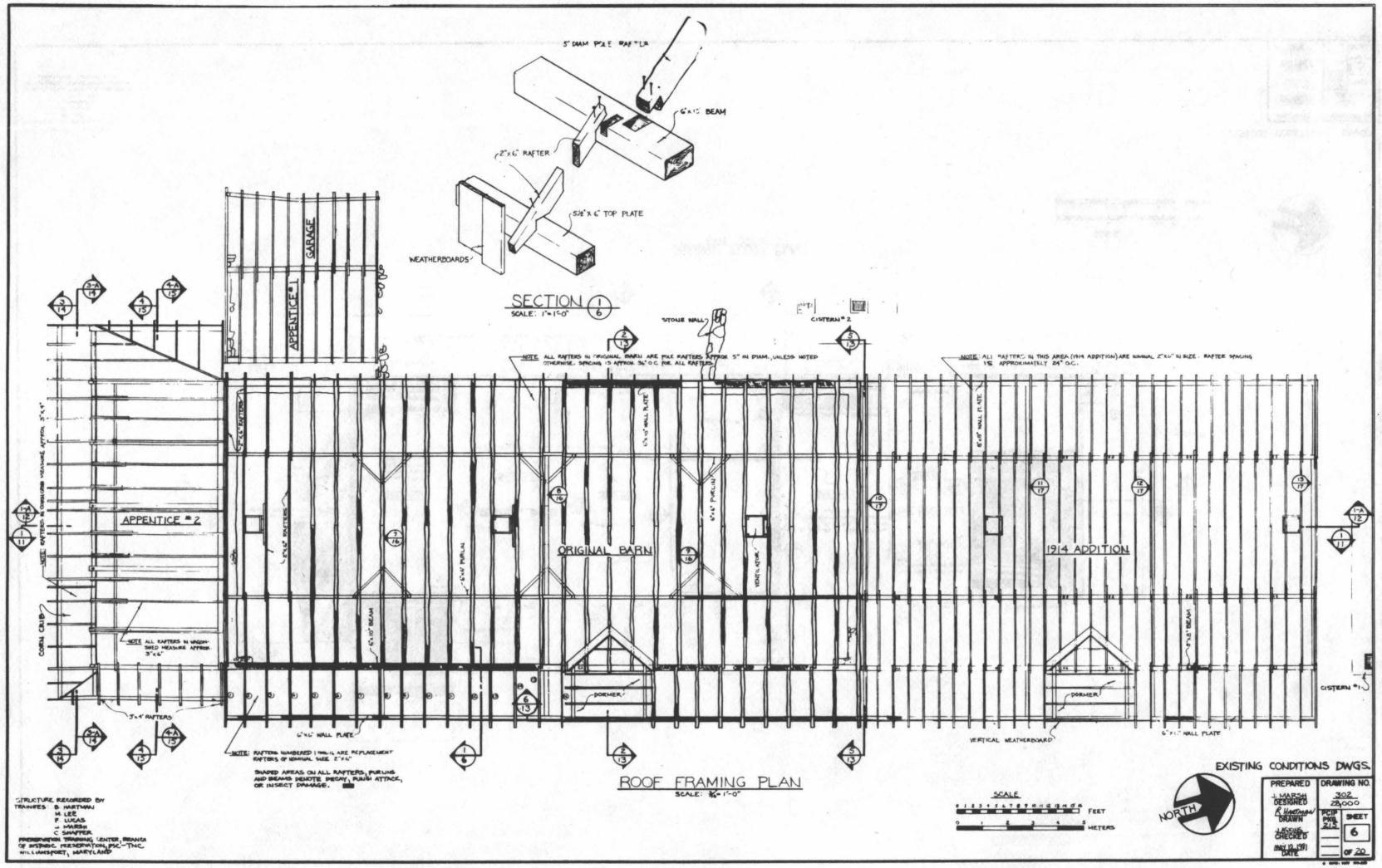
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0 1 2 3 4 5 6 7 METERS

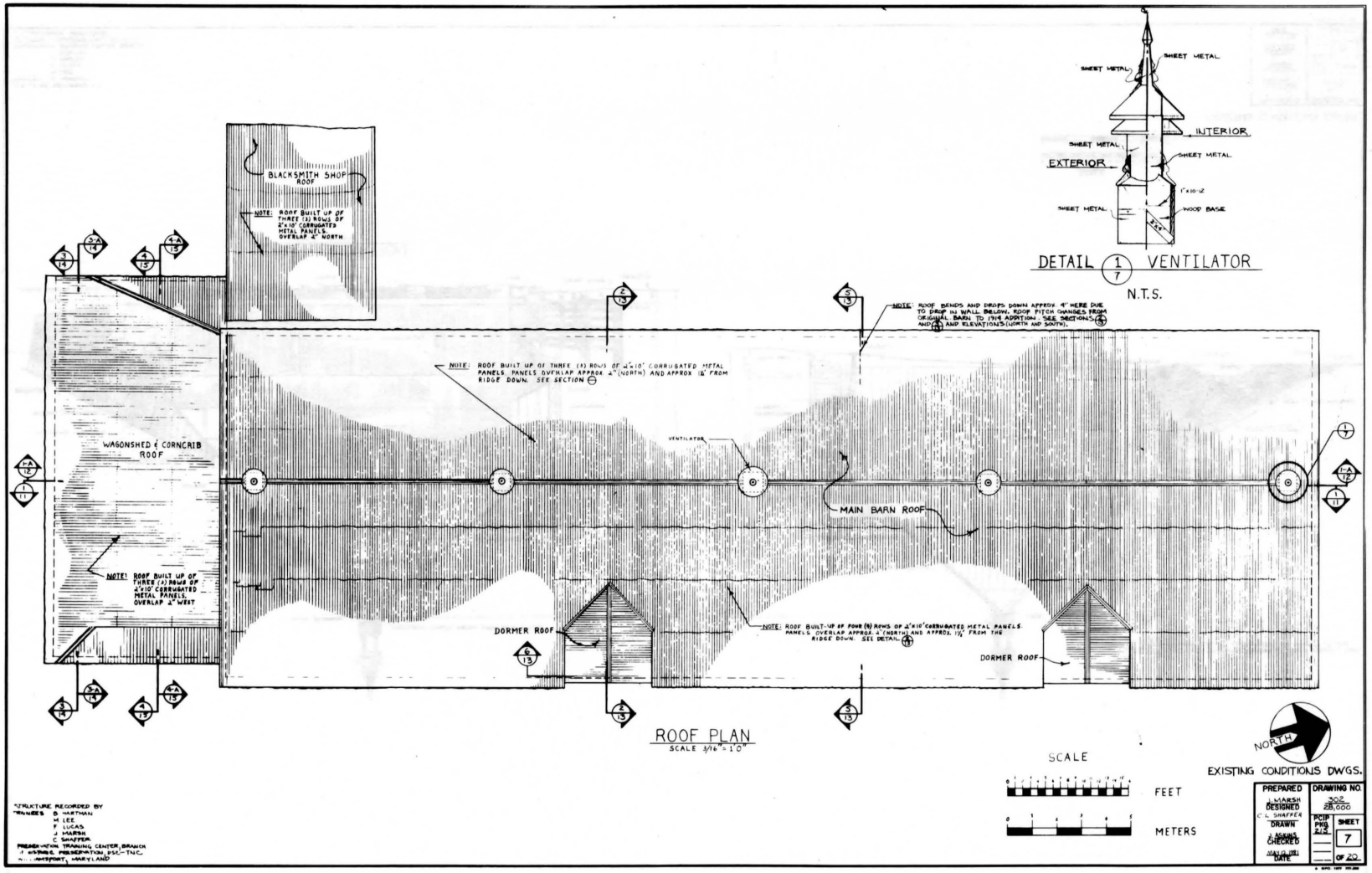
NORTH

STRUCTURE RECORDED BY TRAINEES: B. HARTMAN
M. LEE
F. LUCAS
J. MARSH
C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC—TNC
WILLIAMSPORT, MARYLAND

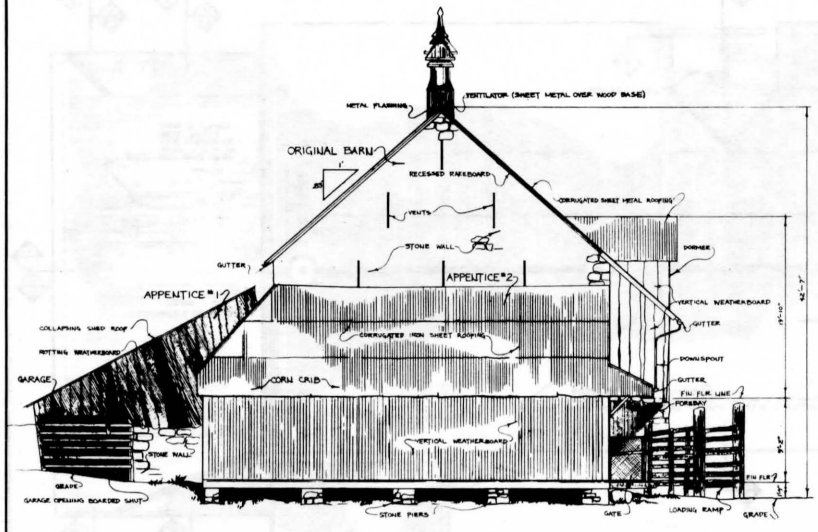
EXISTING CONDITIONS DWGS.

PREPARED	DRAWING NO.
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J. MARSH DRAWN	PCTP PHS 213 SHEET
J. MARSH CHECKED	5
MAY 1981 DATE	OF 20

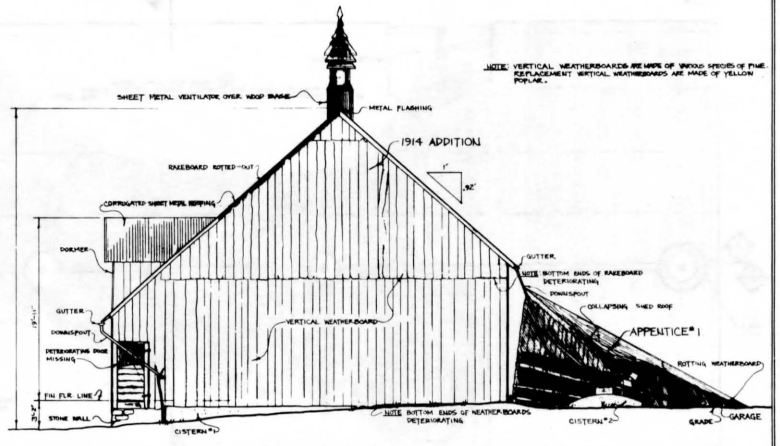

5" DIAM POLE RAFTER
6"x12" BEAM
2"x6" RAFTER
5/8" x 6" TOP PLATE
WEATHERBOARDS
SECTION 1/6
SCALE: 1"=1'-0"
APPENTICE #1
GARAGE
STONE WALL
CISTERN #2
NOTE: ALL RAFTERS IN ORIGINAL BARN ARE POLE RAFTERS APPROX 5" IN DIAM., UNLESS NOTED OTHERWISE. SPACING IS APPROX 36" O.C. FOR ALL RAFTERS.
NOTE: ALL RAFTERS IN THIS AREA (1914 ADDITION) ARE NOMINAL 2"x6" IN SIZE. RAFTER SPACING IS APPROXIMATELY 24" O.C.
APPENTICE #2
ORIGINAL BARN
1914 ADDITION
CORN CRIB
DORMER
DORMER
VERTICAL WEATHERBOARD
CISTERN #1
NOTE: ALL RAFTERS IN WAGON-SHED MEASURE APPROX. 3"x6"
NOTE: RAFTERS NUMBERED 1 THRU 11 ARE REPLACEMENT RAFTERS OF NOMINAL SIZE 2"x6"
SHADED AREAS ON ALL RAFTERS, PURLINS AND BEAMS DENOTE DECAY, PLANT ATTACK, OR INSECT DAMAGE.
ROOF FRAMING PLAN
SCALE: 1/8"=1'-0"
SCALE
FEET
METERS
NORTH
EXISTING CONDITIONS DWGS.
PREPARED
DRAWING NO.
SHEET
6
OF 20
STRUCTURE RECORDED BY TRAINEES: B. HARTMAN, M. LEE, P. LUCAS, J. MARSH, C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC-TNC, HARPERS FERRY, WEST VIRGINIA



STRUCTURE RECORDED BY TRAINEES B. HARTMAN
W. LEE
F. LUCAS
J. MARSH
C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, DSC—TNC
HARPERS FERRY, WEST VIRGINIA



SOUTH ELEVATION
SCALE: 3/16"=1'-0"



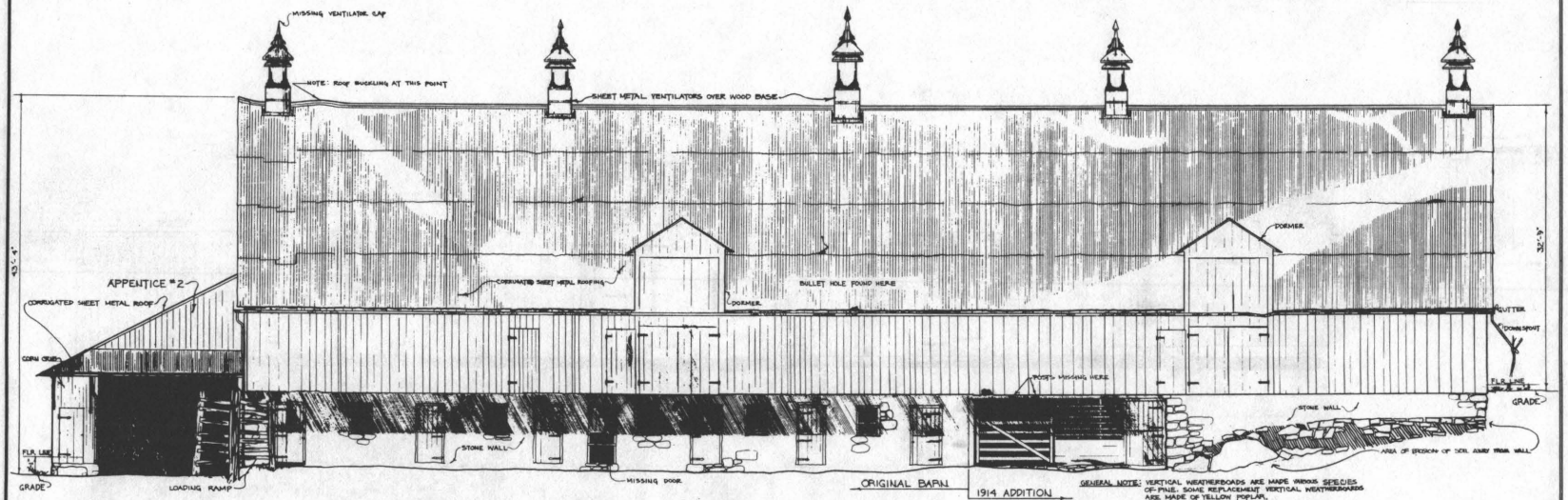
NORTH ELEVATION
SCALE: 3/16"=1'-0"

SCALE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 FEET
0 1 2 3 4 5 METERS

EXISTING CONDITIONS DWGS.

STRUCTURE RECORDED BY TRAINEES:
B. HARTMAN
H. LEE
F. LUCAS
J. MARSH
C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, DSC—TNC, WILLIAMSPORT, MARYLAND

PREPARED	DRAWING NO.
J. MARSH DESIGNED	209 28,050
J. MARSH DRAWN	PCTP PKG. 212
J. MARSH CHECKED	SHEET 8
JULY 15, 1981 DATE	OF 20



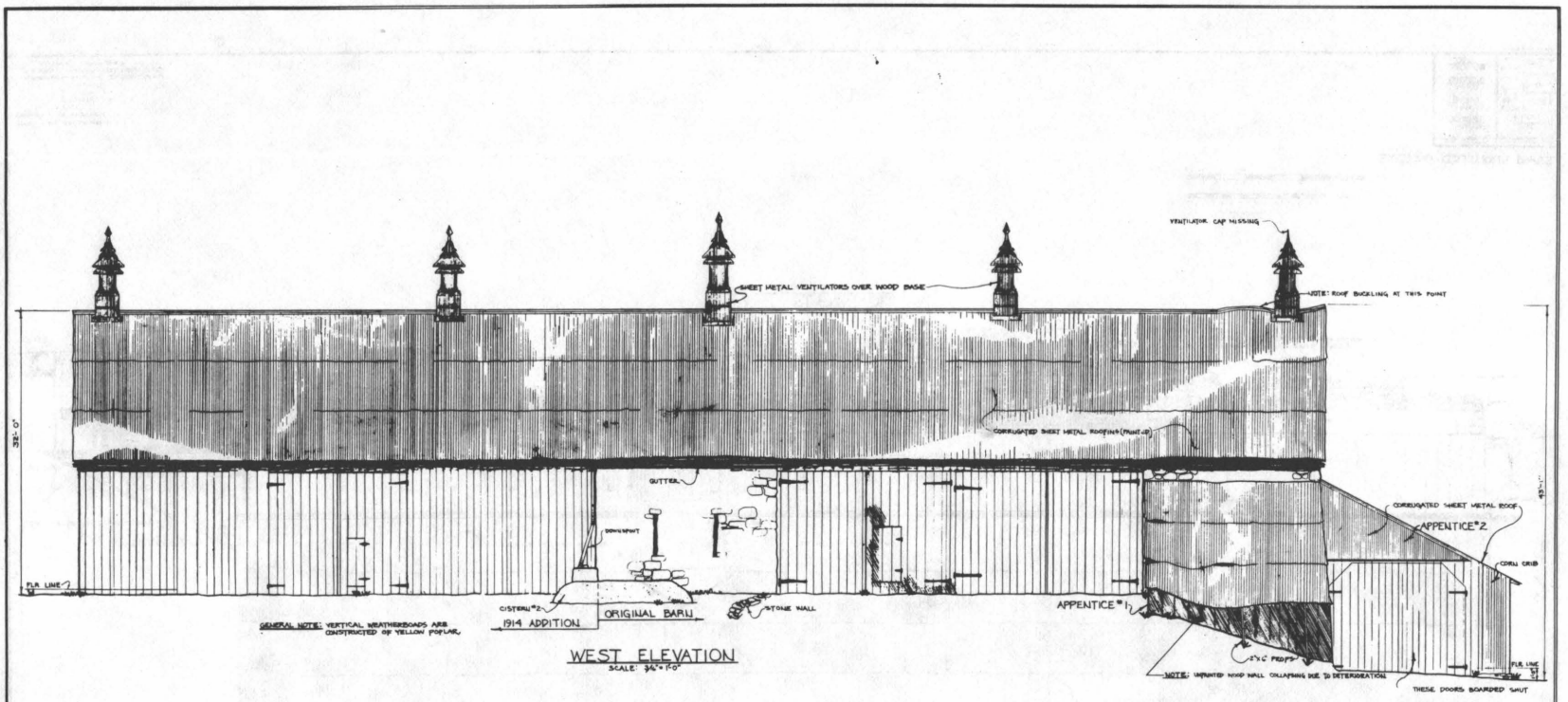
EAST ELEVATION
SCALE: 3/4"=1'-0"

SCALE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 FEET
0 1 2 3 4 5 METERS

EXISTING CONDITIONS DWGS.

STRUCTURE RECORDED BY TRAINEES: B. HARTMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER.
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC—TNC, WILLIAMSPORT, MARYLAND

PREPARED	DRAWING NO.
J. MARSH DESIGNED	302 28,000
J. MARSH DRAWN	SCALE 3/4" = 1'-0"
CHECKED	SHEET 9
DATE	OF 20



GENERAL NOTE: VERTICAL WEATHERBOARDS ARE CONSTRUCTED OF YELLOW POPLAR.

WEST ELEVATION

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

SCALE

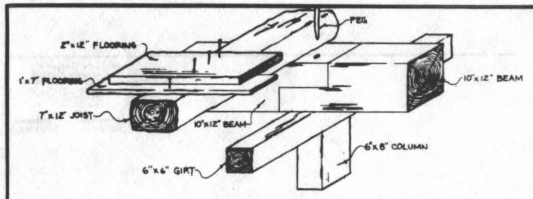
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0 1 2 3 4 5 METERS

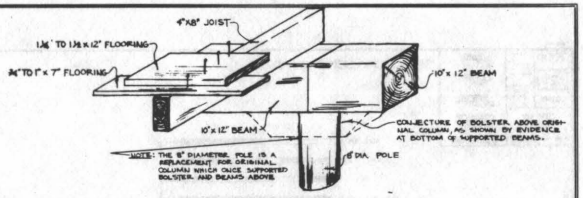
EXISTING CONDITIONS DWGS.

STRUCTURE RECORDED BY TRAINEES: B. HARTMAN
M. LEE
F. LUCAS
J. MARSH
C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC-TNC, WILLIAMSPORT, MARYLAND

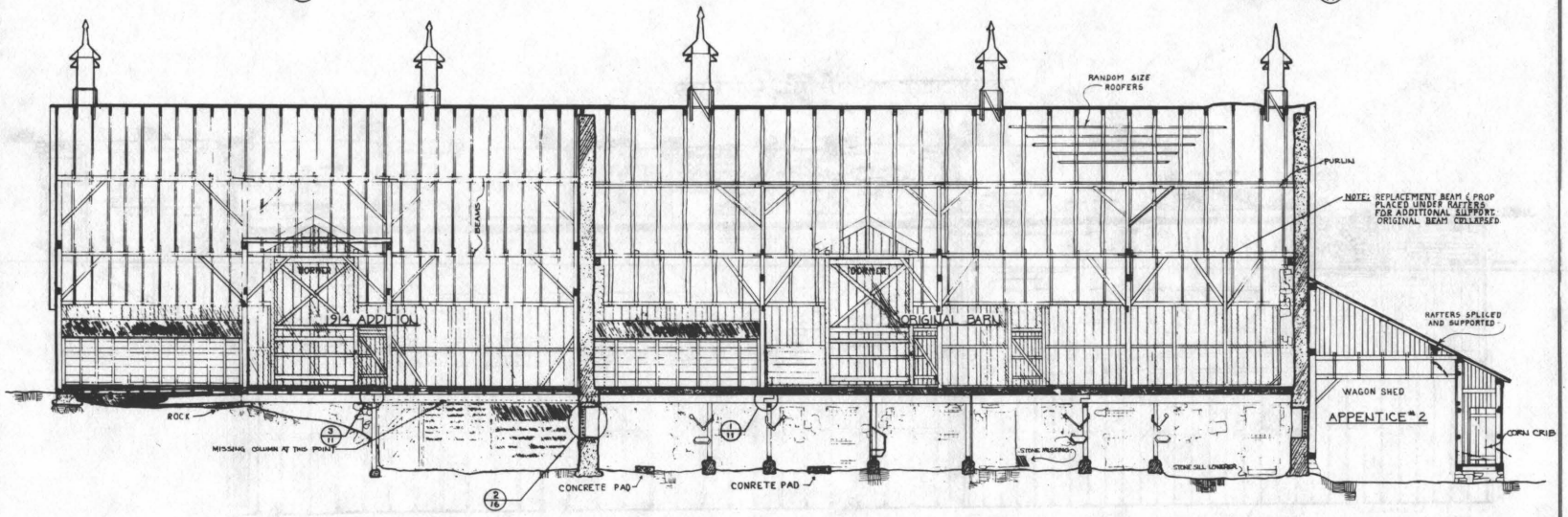
PREPARED by MARSH DESIGNED	DRAWING NO. 302 28,000
J. MARSH DRAWN	SHEET 10
CHECKED	OF 20
APPROVED DATE	



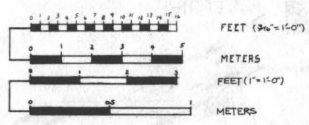
DETAIL (1/11) SCALE: 1"=1'-0"



DETAIL (3/11) SCALE: 1"=1'-0"



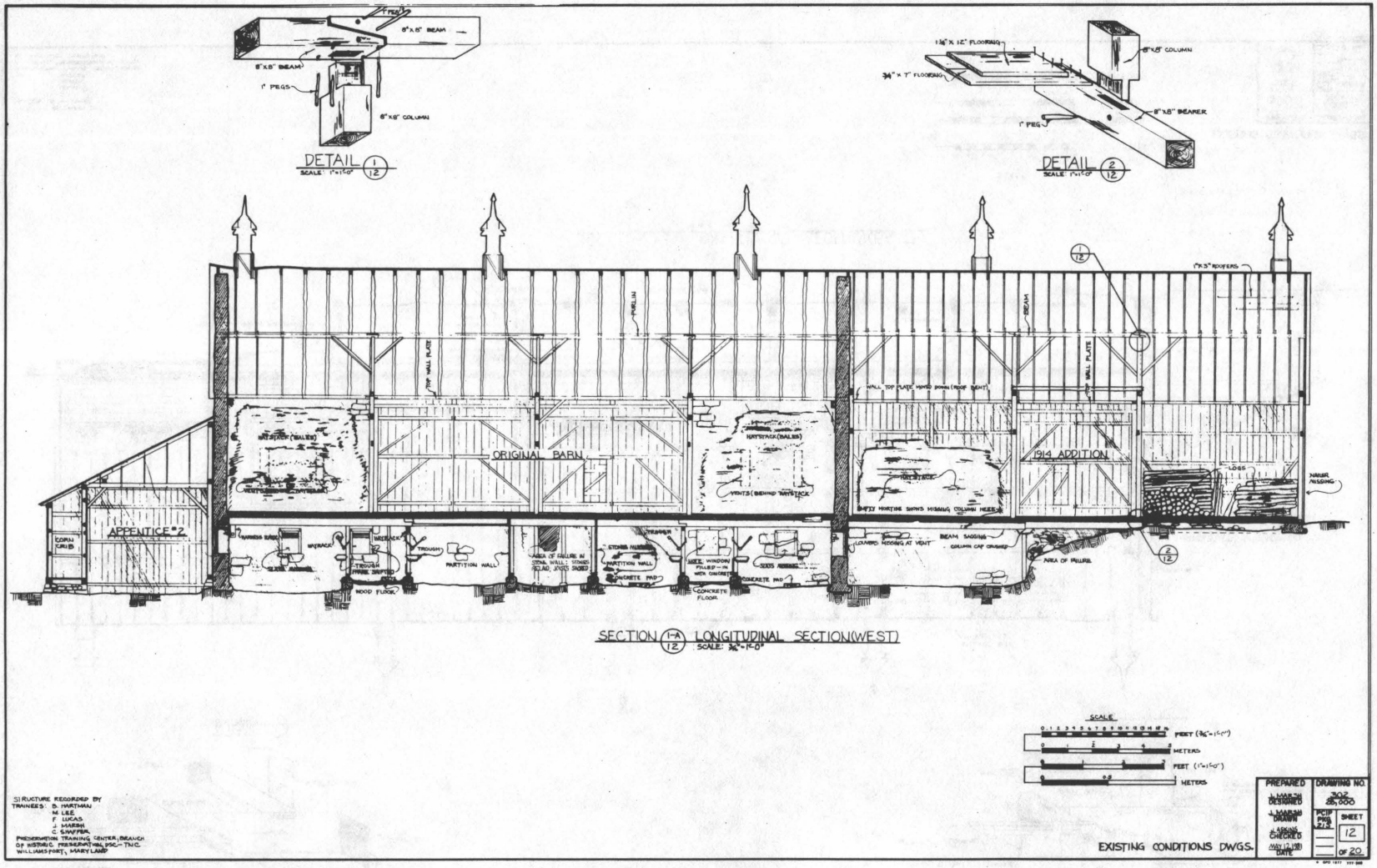
SECTION (1/11) LONGITUDNAL SECTION (EAST) SCALE 3/16"=1'-0"



EXISTING CONDITIONS DWGS.

STRUCTURE RECORDED BY TRAINEES: B. HARTMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER. PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, HSC-TNC, WILLIAMSPORT, MARYLAND

PREPARED	DRAWING NO.
J. MARSH DESIGNED	302 25,000
C.P. LUCAS DRAWN	PCTP PHS NPS
J. LONG CHECKED	SHEET 11 OF 20
JULY 20, 1971 DATE	



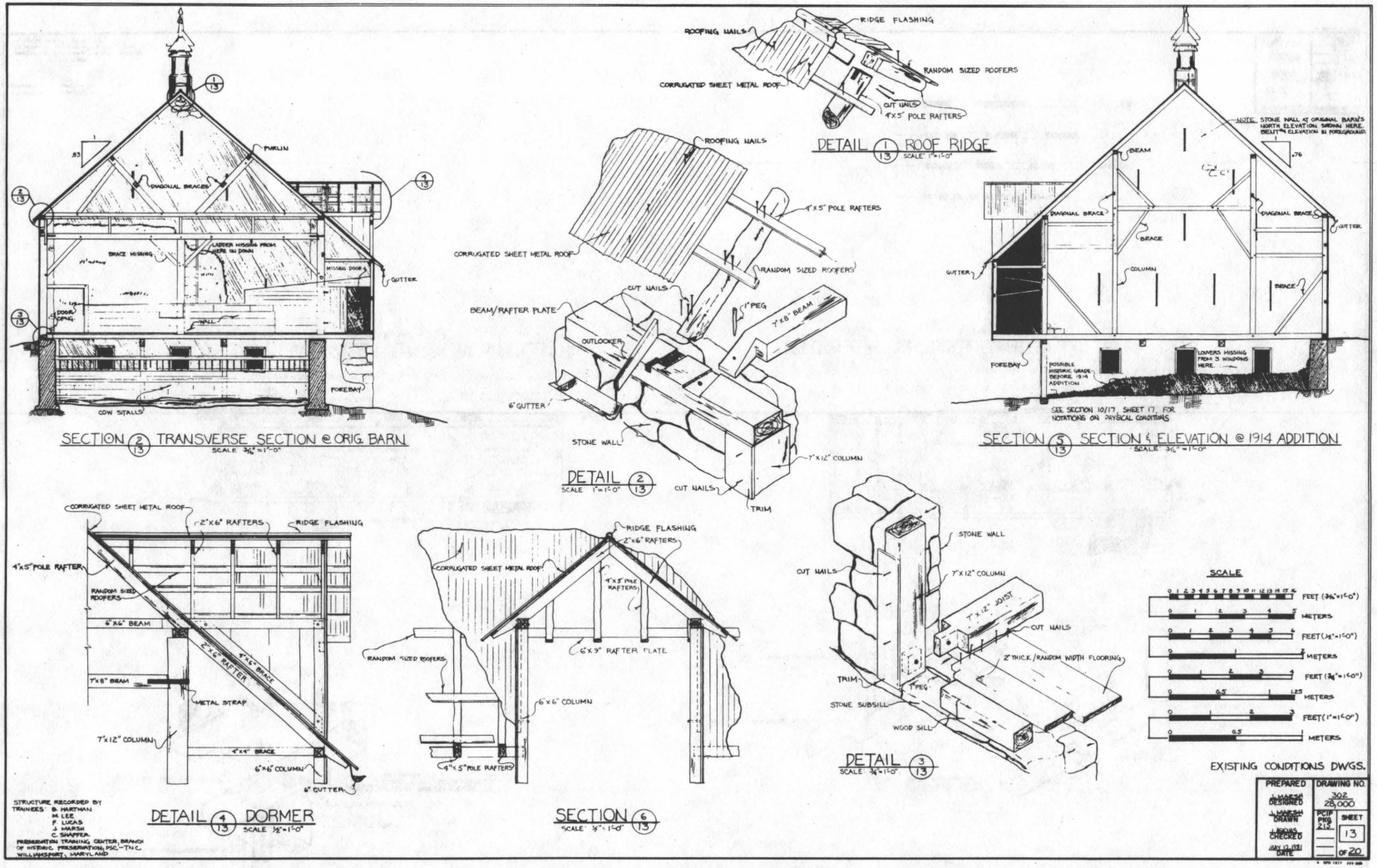
SECTION 1-A/12 LONGITUDINAL SECTION (WEST)
SCALE: 3/8"=1'-0"

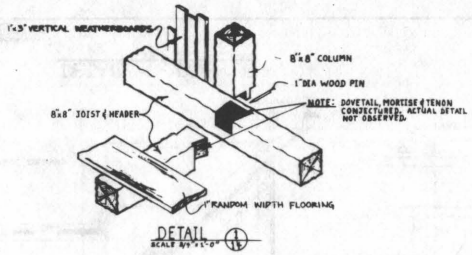
SCALE
FEET (3/8"=1'-0")
METERS
FEET (1"=1'-0")
METERS

STRUCTURE RECORDED BY TRAINEES: D. HARTMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC-TNC, WILLIAMSPORT, MARYLAND

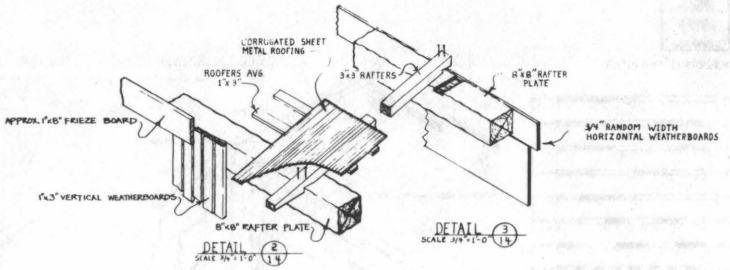
EXISTING CONDITIONS DWGS.

PREPARED	DRAWING NO.
J. MARSH DESIGNED	302 28,000
J. MARSH DRAWN	PCTP PHS. PROJ.
J. ARKINS CHECKED	SHEET 12 OF 20
MAY 14, 1981 DATE	


ROOFING NAILS
RIDGE FLASHING
RANDOM SIZED ROOFERS
CORRUGATED SHEET METAL ROOF
CUT NAILS
4"X5" POLE RAFTERS
DETAIL 1/13 ROOF RIDGE
SCALE 1"=1'-0"
PURLIN
DIAGONAL BRACES
BRACE MISSING
LADDER MISSING FROM HERE ON DOWN
MISSING DOOR
GUTTER
DOOR COPING
WALL
FOREBAY
COW STALLS
SECTION 2/13 TRANSVERSE SECTION @ ORIG. BARN
SCALE 3/16"=1'-0"
ROOFING NAILS
4"X5" POLE RAFTERS
CORRUGATED SHEET METAL ROOF
RANDOM SIZED ROOFERS
CUT NAILS
BEAM/RAFTER PLATE
1" PEG
7"X8" BEAM
OUTLOOKER
6" GUTTER
STONE WALL
7"X12" COLUMN
CUT NAILS
TRIM
DETAIL 2/13
SCALE 1"=1'-0"
NOTE: STONE WALL AT ORIGINAL BARN'S NORTH ELEVATION SHOWN HERE. SEE 11/17 ELEVATION AS FOREGROUNDED
BEAM
DIAGONAL BRACE
BRACE
COLUMN
GUTTER
FOREBAY
POSSIBLE HISTORIC GRADE BEFORE 1914 ADDITION
LOUVERS MISSING FROM 3 WINDOWS HERE
SEE SECTION 10/17, SHEET 17, FOR NOTATIONS ON PHYSICAL CONDITIONS
SECTION 5/13 SECTION & ELEVATION @ 1914 ADDITION
SCALE 3/16"=1'-0"
CORRUGATED SHEET METAL ROOF
12"X6" RAFTERS
RIDGE FLASHING
4"X5" POLE RAFTER
RANDOM SIZED ROOFERS
8"X6" BEAM
2"X6" RAFTER
4"X4" BRACE
7"X8" BEAM
METAL STRAP
7"X12" COLUMN
4"X4" BRACE
6"X6" COLUMN
6" GUTTER
STRUCTURE RECORDED BY TRAINEES: B. HARTMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER. PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC.—TNC, WILLIAMSPORT, MARYLAND
DETAIL 4/13 DORMER
SCALE 1/2"=1'-0"
RIDGE FLASHING
2"X6" RAFTERS
CORRUGATED SHEET METAL ROOF
4"X5" POLE RAFTERS
RANDOM SIZED ROOFERS
6"X9" RAFTER PLATE
6"X6" COLUMN
4"X5" POLE RAFTERS
SECTION 6/13
SCALE 1/2"=1'-0"
STONE WALL
CUT NAILS
7"X12" COLUMN
7"X12" JOIST
CUT NAILS
2" THICK, RANDOM WIDTH FLOORING
TRIM
1" PEG
STONE SUBSILL
WOOD SILL
DETAIL 3/13
SCALE 3/4"=1'-0"
SCALE
FEET (3/16"=1'-0")
METERS
FEET (1/4"=1'-0")
METERS
FEET (3/8"=1'-0")
METERS
FEET (1"=1'-0")
METERS
EXISTING CONDITIONS DWGS.
PREPARED
J. MARSH
DESIGNED
J. MARSH
DRAWN
J. NIGRO
CHECKED
DATE
DRAWING NO.
302
28,000
PCIP PRS 219
SHEET
13
OF 20

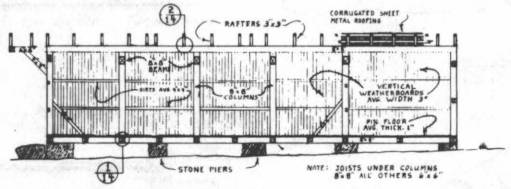


DETAIL (1/14) SCALE 3/4" = 1'-0"



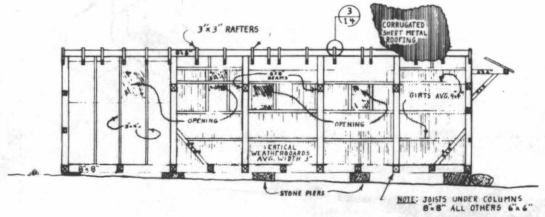
DETAIL (2/14) SCALE 3/4" = 1'-0"

DETAIL (3/14) SCALE 3/4" = 1'-0"



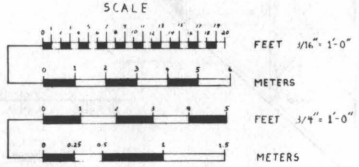
SECTION (3/14) SECTION & ELEVATION AT CORN CRIB

SCALE 3/16" = 1'-0"



SECTION (3-A/14) SECTION & ELEVATION AT CORN CRIB

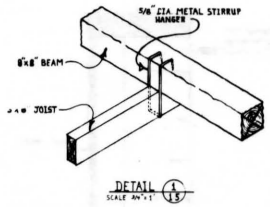
SCALE 3/16" = 1'-0"



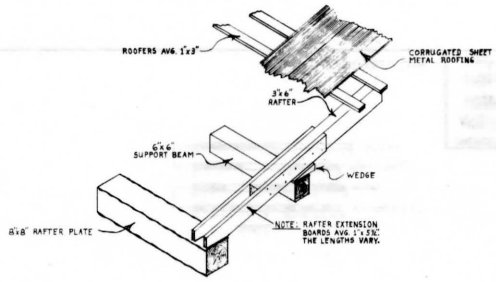
EXISTING CONDITIONS DWGS.

STRUCTURE RECORDED BY TRAINEES: B. HARTMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER. PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC - TNC, WILLIAMSPORT, MARYLAND

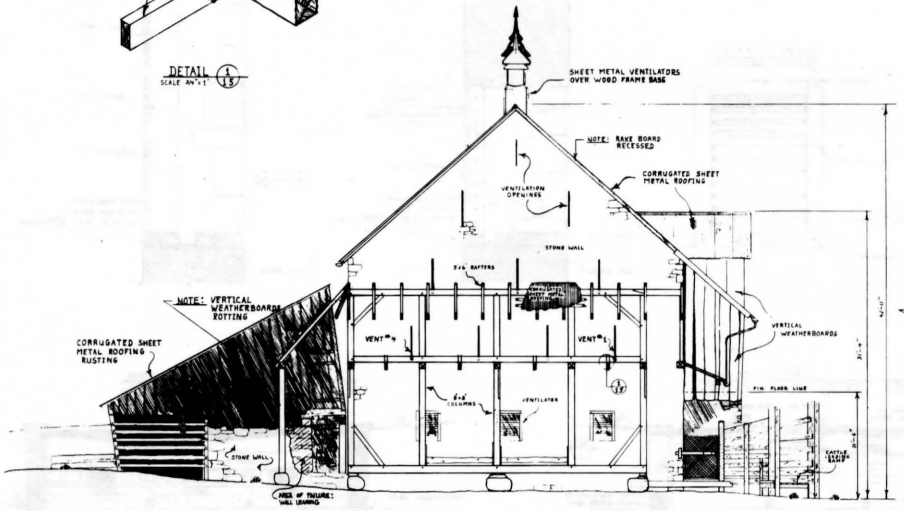
PREPARED	DRAWING NO.
J. MARSH DESIGNED	302
C.L. SHAFFER DRAWN	28,000
J. MARSH CHECKED	PCSP PHIL.
JULY 8, 1981 DATE	SHEET 14 OF 20



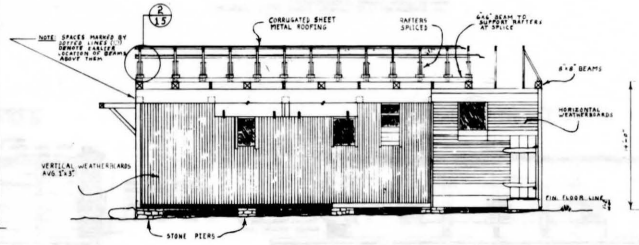
DETAIL (1/15)
SCALE 1" = 1'



DETAIL (2/15)
SCALE 1" = 1'



SECTION (4-A/15) SECTION & ELEVATION AT WAGON SHED
SCALE 3/16" = 1'0"



SECTION (4/15) SECTION & ELEVATION AT WAGON SHED
SCALE 3/16" = 1'0"

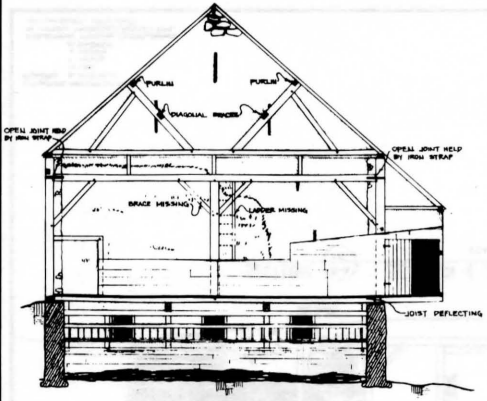
SCALE

FEET 3/16" = 1'
METERS
FEET 3/4" = 1
METERS

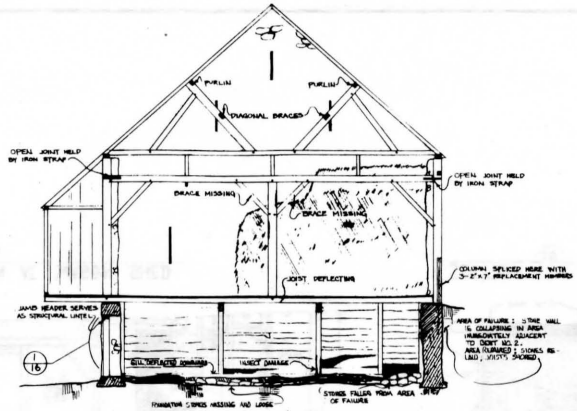
EXISTING CONDITIONS DWGS.

STRUCTURE RECORDED BY
TRAINEES B. HARTMAN
M. LEE
P. LUCAS
J. MARSH
C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, DSC—TNC
WILLIAMSPORT, MARYLAND

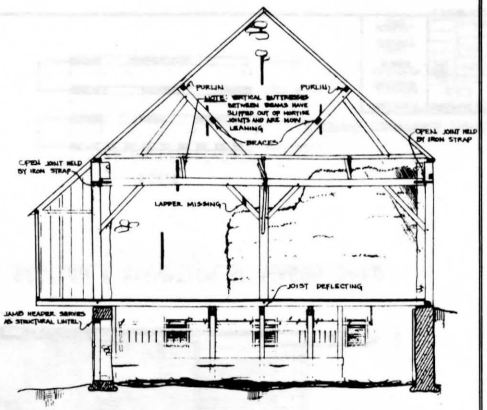
PREPARED	DRAWING NO.
J. MARSH DESIGNED	302
C.L. SHAFFER DRAWN	28,000
CHECKED	PROJ. NO.
APPROVED DATE	SHEET 15 OF 20



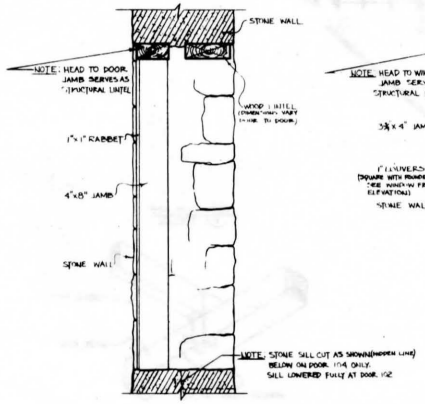
SECTION (9/16) BENT NO 3
SCALE: 3/4"=1'-0"



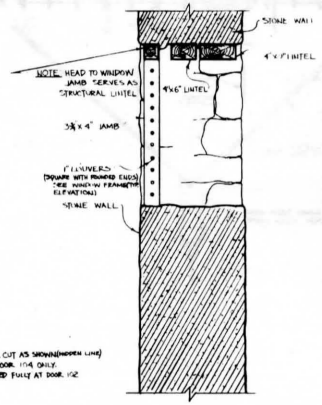
SECTION (8/16) BENT NO 2
SCALE: 3/4"=1'-0"



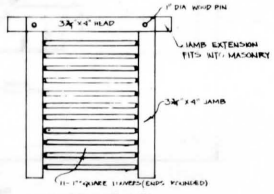
SECTION (7/16) BENT NO. 1
SCALE: 3/4"=1'-0"



TYP DOOR FRAMING DTL (1/16)
SCALE: 1"=1'-0"

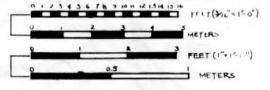


TYP WINDOW FRAMING DTL (2/16)
SCALE: 1"=1'-0"



WINDOW FRAME
(TYPICAL ELEVATION)

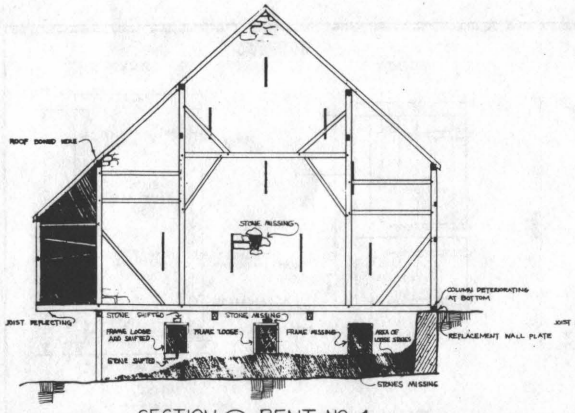
GENERAL NOTE: BENT STRUCTURAL MEMBERS ARE CONSTRUCTED OF VARYING PROPORTIONS OF OAK AND PINE. ALL VERTICAL AND DIAGONAL MEMBERS, AND THE JOISTS ARE OAK. THE HORIZONTAL MEMBERS ARE OF PINE.



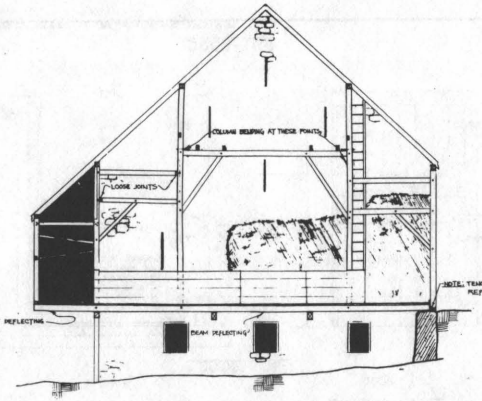
PREPARED	DRAWING NO.
J. MARSH DESIGNED	302 28,000
J. MARSH DRAWN	PCIP PKG. 213 SHEET 16
J. MARSH CHECKED	OF 20
AMS/JMM/JL DATE	

EXISTING CONDITIONS DWGS.

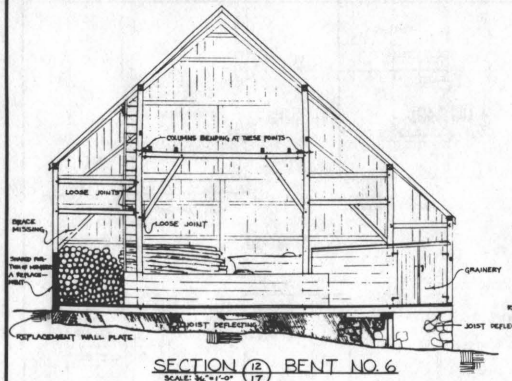
STRUCTURE RECORDED BY TRAINEES: D. HARTMAN, M. LEE, J. LUCAS, J. MARSH, C. SHAFFER, PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, PSC-TWO, WILLIAMSPORT, MARYLAND



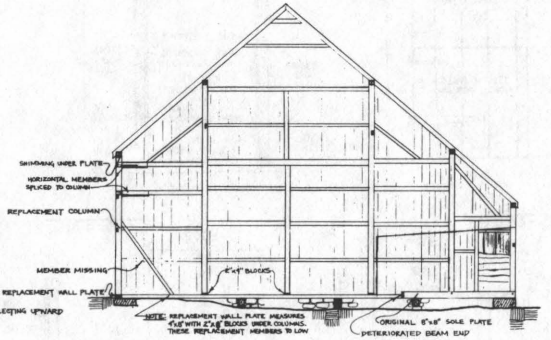
SECTION (10/17) BENT NO. 4
SCALE: 3/8"=1'-0"



SECTION (11/17) BENT NO. 5
SCALE: 3/8"=1'-0"



SECTION (12/17) BENT NO. 6
SCALE: 3/8"=1'-0"



SECTION (13/17) BENT NO. 7
SCALE: 3/8"=1'-0"

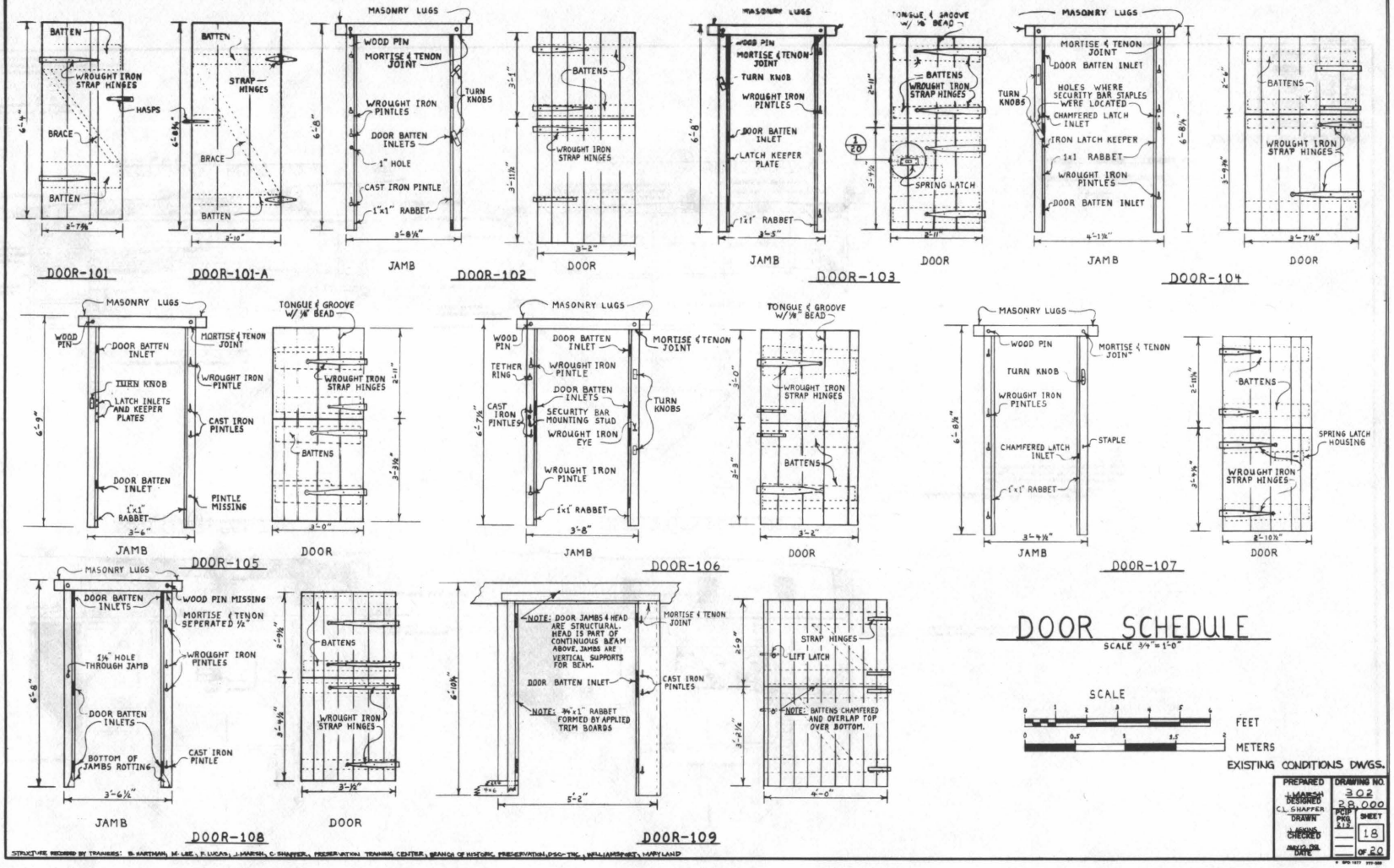
GENERAL NOTE: STRUCTURAL FRAMING OF BENTS IS CONSTRUCTED OF WHITE OAK.
BENTS LEANING TO REAR OF STRUCTURE DUE TO DETERIORATION OF COLUMN BOTTOMS AND IMPROPERLY SIZED REPLACEMENT WALL PLATE.

SCALE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 FEET
0 1 2 3 4 5 METERS

EXISTING CONDITIONS DWGS.

STRUCTURE RECORDED BY TRAINEES: B. HARTMAN
M. LEE
F. LUCAS
J. MARSH
C. SHAWVER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, INC.-TNC. WILLIAMSPORT, MARYLAND

PREPARED	DRAWING NO.
J. MARSH DESIGNED	302 28,000
J. MARSH DRAWN	PCTP PKG 215
CHECKED	SHEET 17
APPROVED DATE	OF 20



DOOR SCHEDULE

SCALE 3/4" = 1'-0"

SCALE

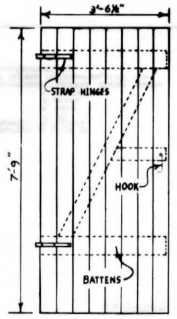
0 1 2 3 4 5 FEET

0 0.5 1 2.5 2 METERS

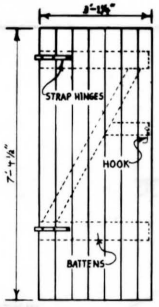
EXISTING CONDITIONS DWGS.

PREPARED	DRAWING NO.
J. MARSH	302
DESIGNED	28,000
C.L. SHAFFER	POP PRO. SYS.
DRAWN	SHEET
ISSUED	18
CHECKED	OF 20
APPD. DIR. DATE	

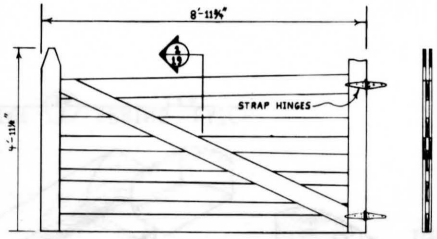
STRUCTURE RECORDED BY TRAINEES: B. HARTMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER, PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, DSC-TNC, WILLIAMSPORT, MARYLAND



DOORS-201 & 204 SIMILAR



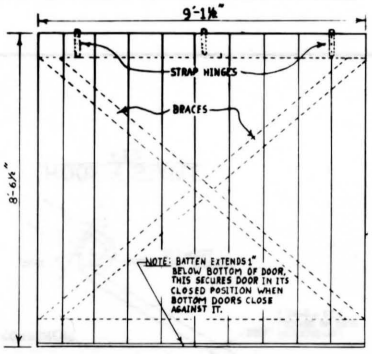
DOOR-202



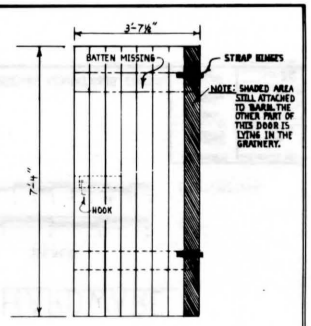
GATE-1



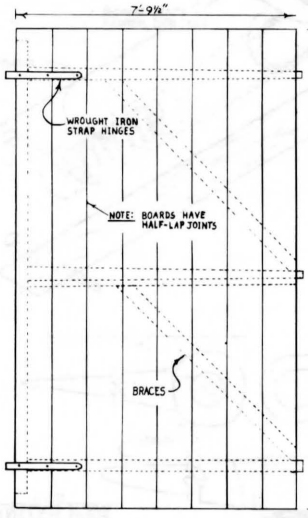
SECTION 4/19



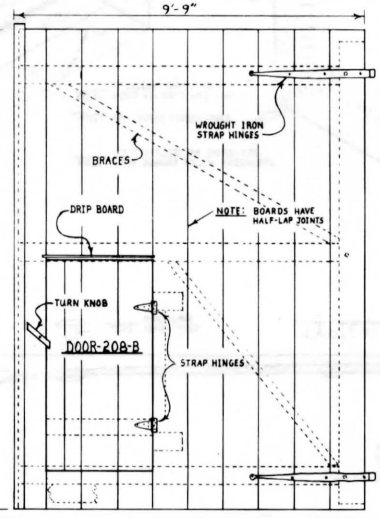
DOORS 203-B & 205-B SIMILAR



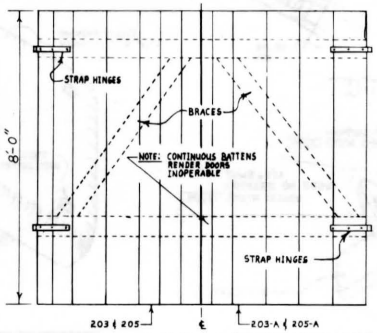
DOOR-206



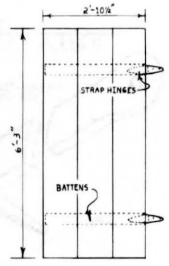
DOORS 207, 208, 209 & 209-A SIMILAR



DOORS 207-A & 208-A SIMILAR



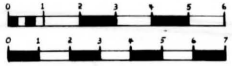
DOORS 203 & 205 SIMILAR DOORS 203-A & 205-A SIMILAR



DOOR-210

DOOR SCHEDULE

SCALE ¾"=1'-0"

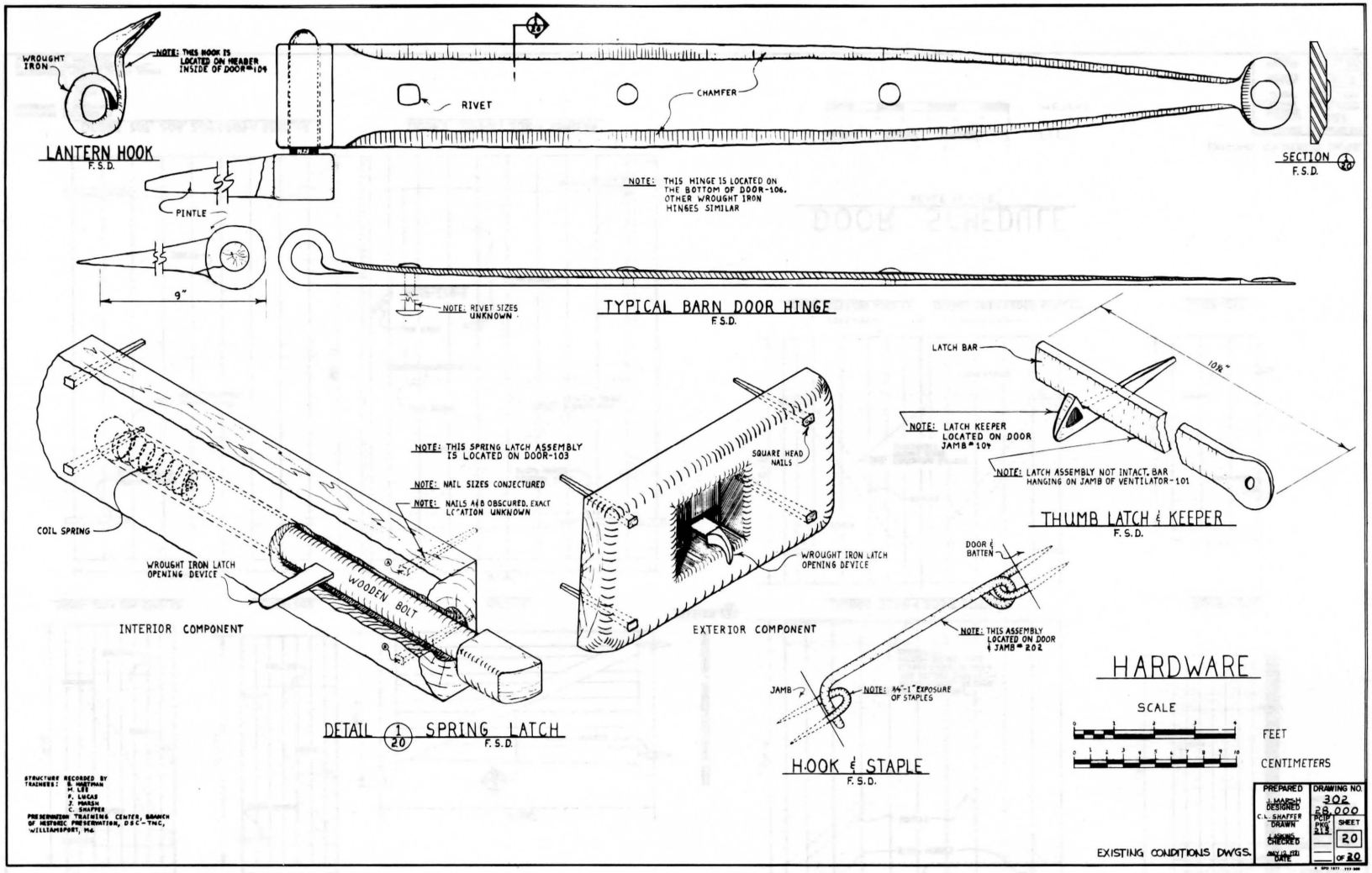


EXISTING CONDITIONS DWGS.

STRUCTURE TRAINEES: RECORDED BY
B. HARTMAN
M. LEE
P. LUCAS
J. MARSH
C. SHAFFER

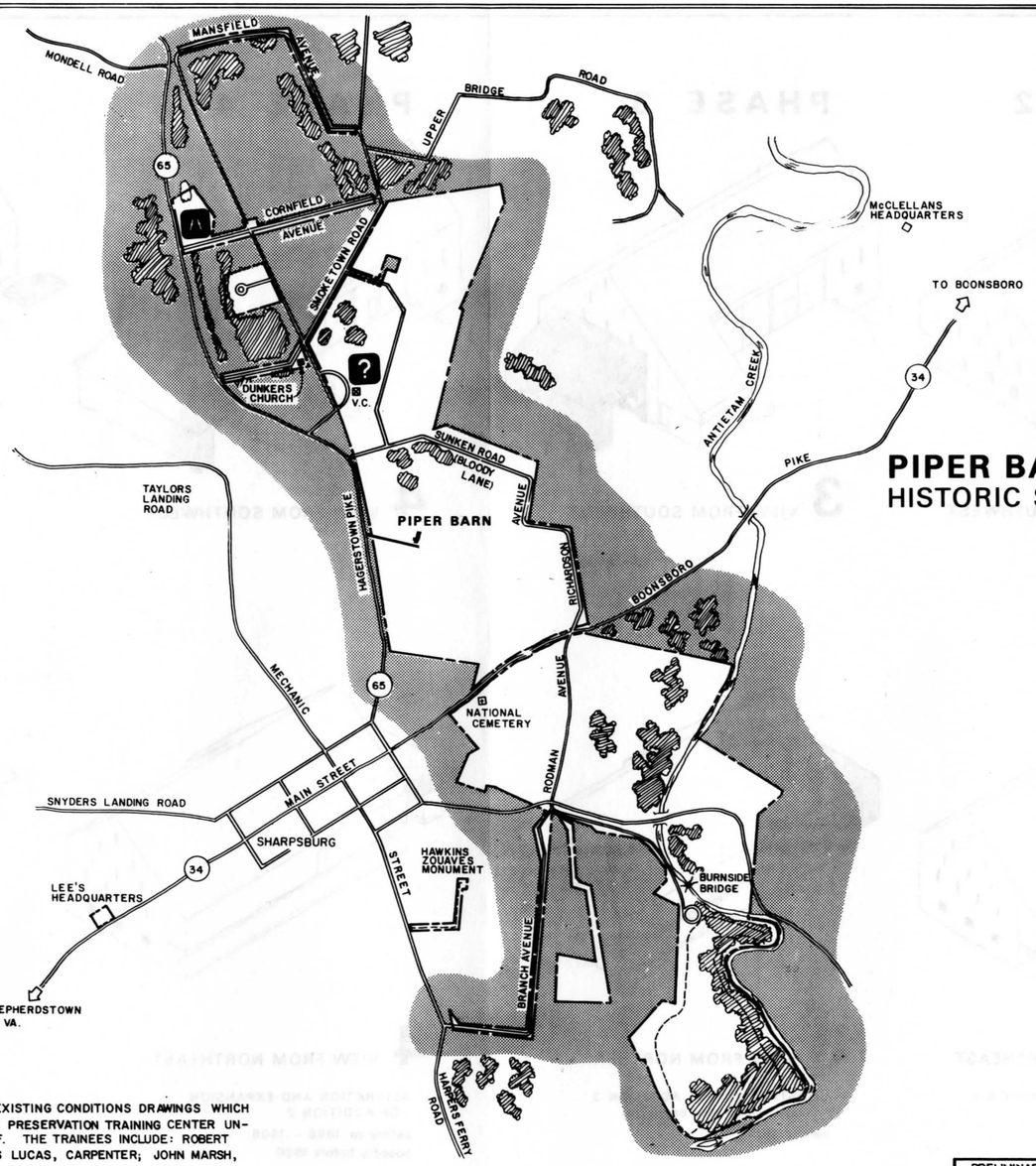
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, DSC-INC, WILLIAMSPORT, MARYLAND

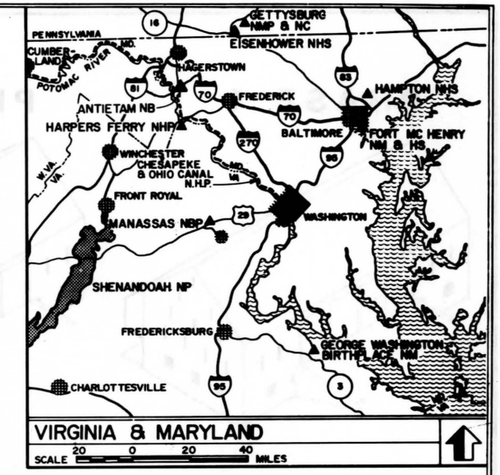
PREPARED J. MARSH DESIGNED C.L. SHAFFER DRAWN A. DRUHE CHECKED MAY 13, 1981 DATE	DRAWING NO. 302 28,000 HCRS PRS 217 SHEET 19 OF 20


WROUGHT IRON
NOTE: THIS HOOK IS LOCATED ON HEADER INSIDE OF DOOR-104
LANTERN HOOK
F.S.D.
RIVET
CHAMFER
SECTION
F.S.D.
PINTLE
9"
NOTE: THIS HINGE IS LOCATED ON THE BOTTOM OF DOOR-106. OTHER WROUGHT IRON HINGES SIMILAR
NOTE: RIVET SIZES UNKNOWN.
TYPICAL BARN DOOR HINGE
F.S.D.
LATCH BAR
10⅝"
NOTE: LATCH KEEPER LOCATED ON DOOR JAMB-104
NOTE: LATCH ASSEMBLY NOT INTACT. BAR HANGING ON JAMB OF VENTILATOR-101
THUMB LATCH & KEEPER
F.S.D.
NOTE: THIS SPRING LATCH ASSEMBLY IS LOCATED ON DOOR-103
NOTE: NAIL SIZES CONJECTURED
NOTE: NAILS A&B OBSCURED, EXACT LOCATION UNKNOWN
SQUARE HEAD NAILS
COIL SPRING
WROUGHT IRON LATCH OPENING DEVICE
WOODEN BOLT
INTERIOR COMPONENT
WROUGHT IRON LATCH OPENING DEVICE
EXTERIOR COMPONENT
DETAIL 1/20 SPRING LATCH
F.S.D.
DOOR & BATTEN
NOTE: THIS ASSEMBLY LOCATED ON DOOR & JAMB-202
JAMB
NOTE: ¼"-1" EXPOSURE OF STAPLES
HOOK & STAPLE
F.S.D.
HARDWARE
SCALE
FEET
CENTIMETERS
STRUCTURE RECORDED BY TRAINEES: B. HOFFMAN, M. LEE, F. LUCAS, J. MARSH, C. SHAFFER
PRESERVATION TRAINING CENTER, BRANCH OF HISTORIC PRESERVATION, OSC-TNC, WILLIAMSPORT, MD.
PREPARED J. MARSH
DESIGNED
DRAWN C.L. SHAFFER
CHECKED
DATE
DRAWING NO. 302 20,000
SHEET 20 OF 20
EXISTING CONDITIONS DWGS.

APPENDIX E

PRELIMINARY DESIGN DRAWINGS, STABILIZATION ALTERNATIVES





PIPER BARN
HISTORIC STRUCTURE REPORT DRAWINGS

1 COVER SHEET
2 HISTORIC DEVELOPMENT, PHASES 1-5
3 HISTORIC DEVELOPMENT, PHASES 6-8
4 ALTERNATIVES FOR STABILIZATION
5 FIRST FLOOR PLAN
6 SECOND FLOOR FRAMING PLAN
7 SECOND FLOOR PLAN
8 ROOF FRAMING PLAN
9 ROOF PLAN
10 NORTH AND SOUTH ELEVATIONS
11 EAST ELEVATION
12 WEST ELEVATION
13 EAST LONGITUDINAL SECTION
14 WEST LONGITUDINAL SECTION
15 ADDITION 2 SECTIONS
16 ORIGINAL BARN FIRST FLOOR BENTS
17 ORIGINAL BARN SECTIONS
18 ADDITION 3 SECTIONS

LEGEND

- INFORMATION
- PICNIC AREA
- VISITOR CENTER
- PARK BOUNDARY
- ROAD
- TRAIL
- WOODED AREA

NOTE:
THE PRELIMINARY DESIGN DRAWINGS UTILIZE THE EXISTING CONDITIONS DRAWINGS WHICH WERE PREPARED BY TRAINEES OF THE WILLIAMSPORT PRESERVATION TRAINING CENTER UNDER THE DIRECTION OF JAMES ASKINS, BRANCH CHIEF. THE TRAINEES INCLUDE: ROBERT HARTMAN, MASON; MICHAEL LEE, CARPENTER; FRANCIS LUCAS, CARPENTER; JOHN MARSH, ARCHITECT; AND CHARLES SHAFFER, MASON.

ANTIETAM NATIONAL BATTLEFIELD
BASIC DATA

PRELIMINARY DESIGN DRAWINGS
STABILIZATION ALTERNATIVES

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

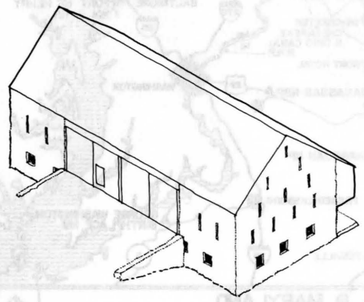
PREPARED SIEKKINEN
DESIGNED MARTINEZ
DRAWN DONALD
CHECKED
8-18-82 DATE

TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
PIPER FARM
NAME OF PARK
ANTIETAM NATIONAL BATTLEFIELD
NATIONAL CAPITAL REGION WASHINGTON COUNTY MARYLAND STATE

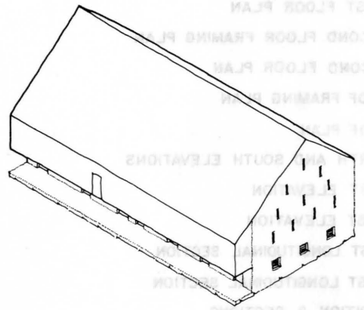
DRAWING NO
302
25000
PKG NO. 215
SHEET 1 OF 18

GPO 1974 678-711

PHASE 1



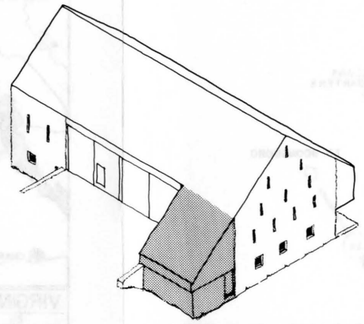
1 VIEW FROM SOUTHWEST



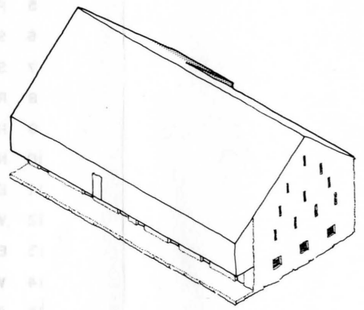
1 VIEW FROM NORTHEAST

PENNSYLVANIA BANK BARN
ca. 1800 – 1845

PHASE 2



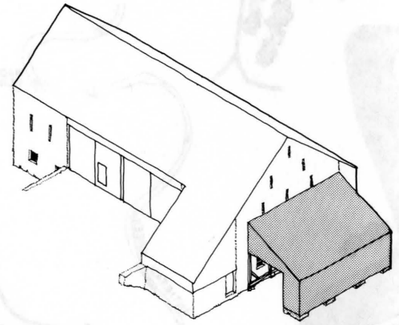
2 VIEW FROM SOUTHWEST



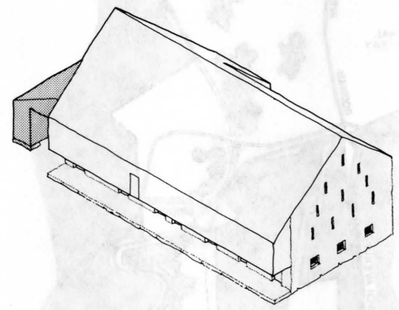
2 VIEW FROM NORTHEAST

CONSTRUCTION OF ADDITION 1
before 1880;
possibly before 1862

PHASE 3



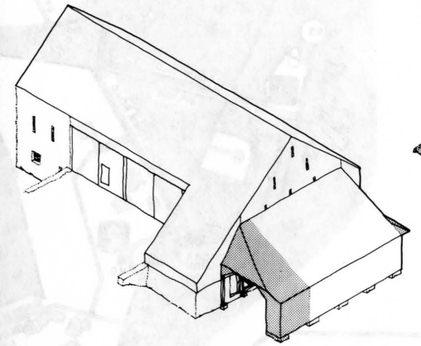
3 VIEW FROM SOUTHWEST



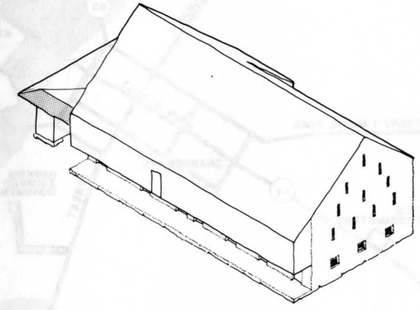
3 VIEW FROM NORTHEAST

CONSTRUCTION OF ADDITION 2
(wagon shed and corncrib)
before 1880

PHASE 4



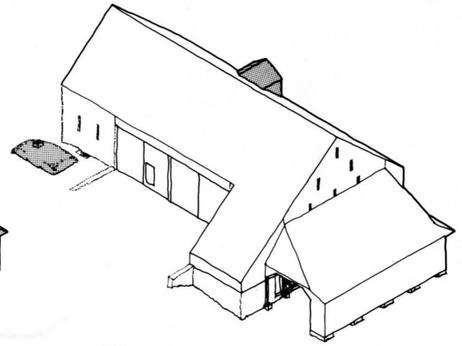
4 VIEW FROM SOUTHWEST



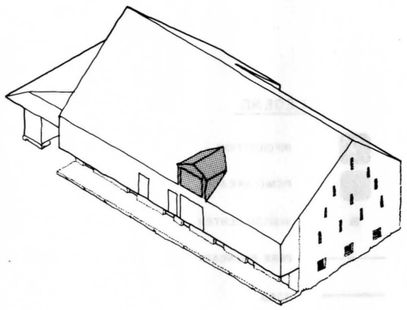
4 VIEW FROM NORTHEAST

ALTERATION AND EXPANSION
OF ADDITION 2
before ca. 1896 – 1906;
possibly before 1880

PHASE 5



5 VIEW FROM SOUTHWEST



5 VIEW FROM NORTHEAST

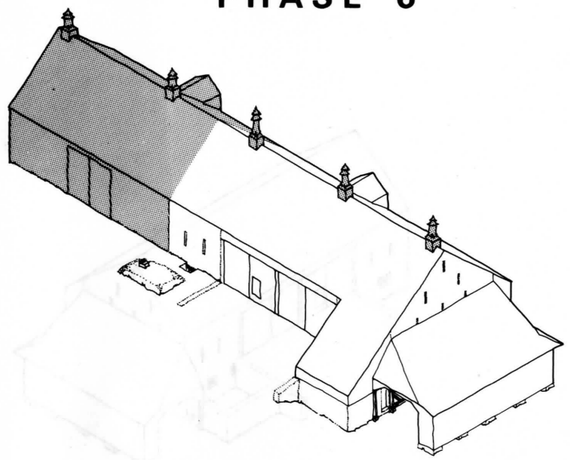
ADDITION OF DORMER AND
CISTERN 1
ca. 1896 – 1914

HISTORIC DEVELOPMENT OF THE PIPER BARN

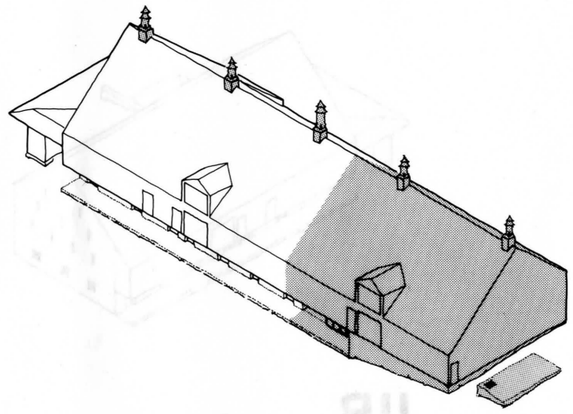
PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
SIEKKINEN	PCIP PKG. 215
DRAWN	SHEET 2
DONALD	OF 18
CHECKED	
8-18-82	
DATE	

GPO: 1977 777-388

PHASE 6



6 VIEW FROM SOUTHWEST

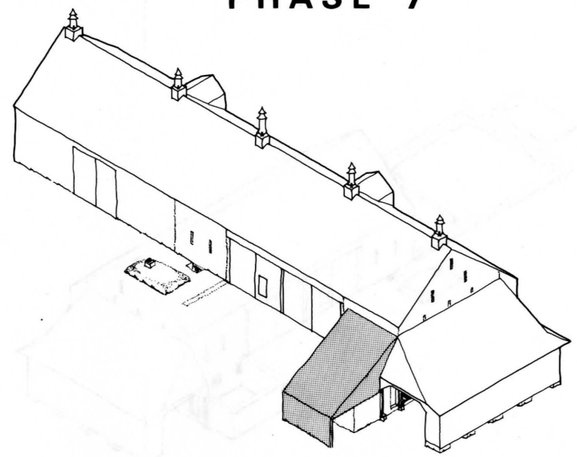


6 VIEW FROM NORTHEAST

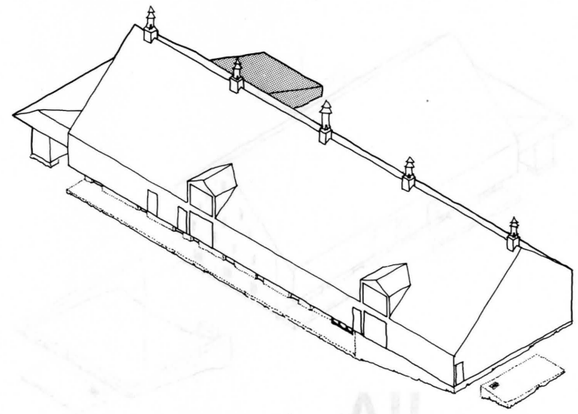
CONSTRUCTION OF ADDITION 3 AND INSTALLATION OF ROOF VENTILATORS

ca. 1914

PHASE 7



7 VIEW FROM SOUTHWEST

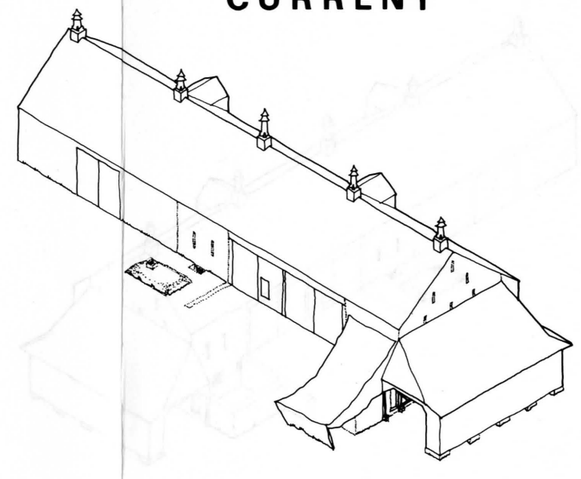


7 VIEW FROM NORTHEAST

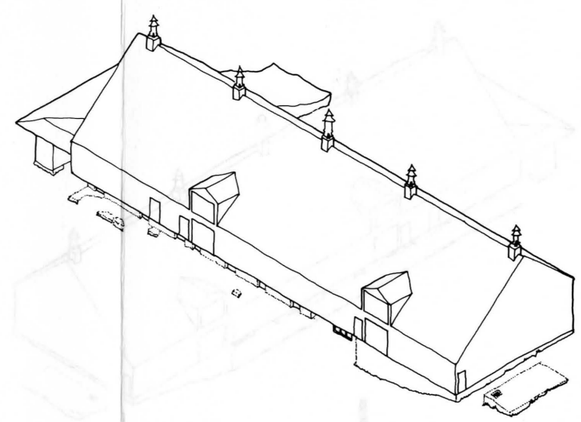
ALTERATION OF ROOFLINE AND EXPANSION OF ADDITION 1

ca. 1929

CURRENT



8 VIEW FROM SOUTHWEST



8 VIEW FROM NORTHEAST

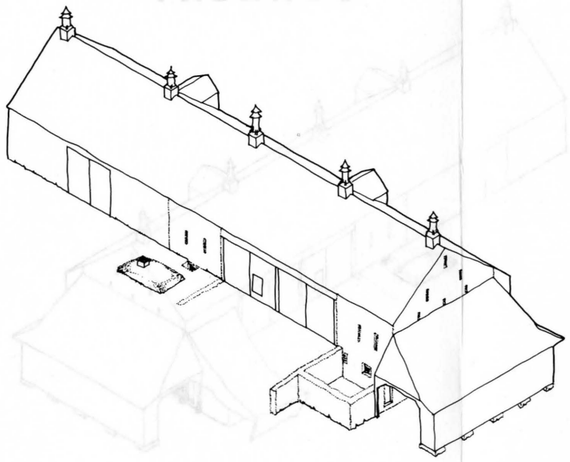
STRUCTURAL COLLAPSE OF ADDITION 1
DETERIORATION OF STONE WALKWAY

HISTORIC DEVELOPMENT OF THE PIPER BARN

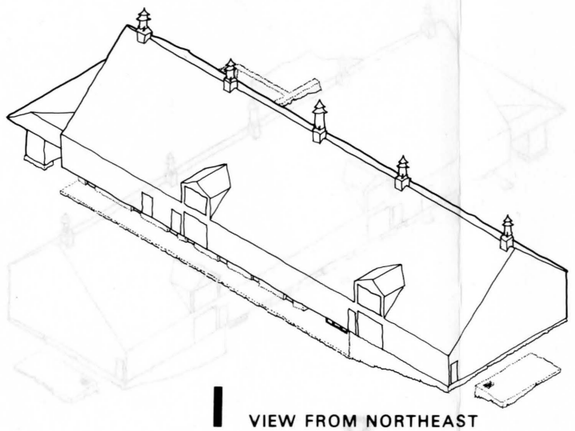
PREPARED SIEKKINEN	DRAWING NO. 302 25000
DESIGNED SIEKKINEN	PCIP PKG. 215
DRAWN DONALD	SHEET 3
CHECKED 8-18-82	OF 18
DATE	

* GPO: 1977 777-999

ALTERNATIVE I



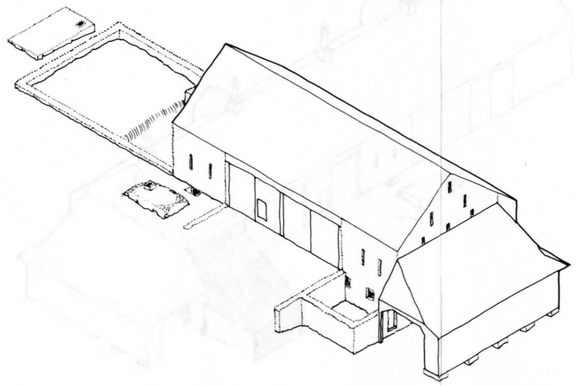
I VIEW FROM SOUTHWEST



I VIEW FROM NORTHEAST

STRUCTURALLY UNSTABLE WOOD STRUCTURE
OF ADDITION 1 DEMOLISHED

ALTERNATIVE IIA



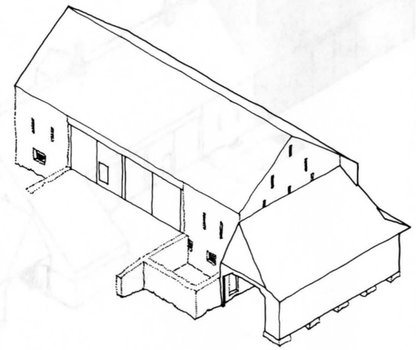
IIA VIEW FROM SOUTHWEST



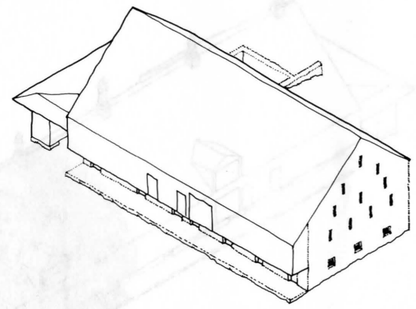
IIA VIEW FROM NORTHEAST

WOOD STRUCTURES OF ADDITIONS 1 AND 3
DEMOLISHED
DORMER AND ROOF VENTILATORS REMOVED

ALTERNATIVE IIB



IIB VIEW FROM SOUTHWEST



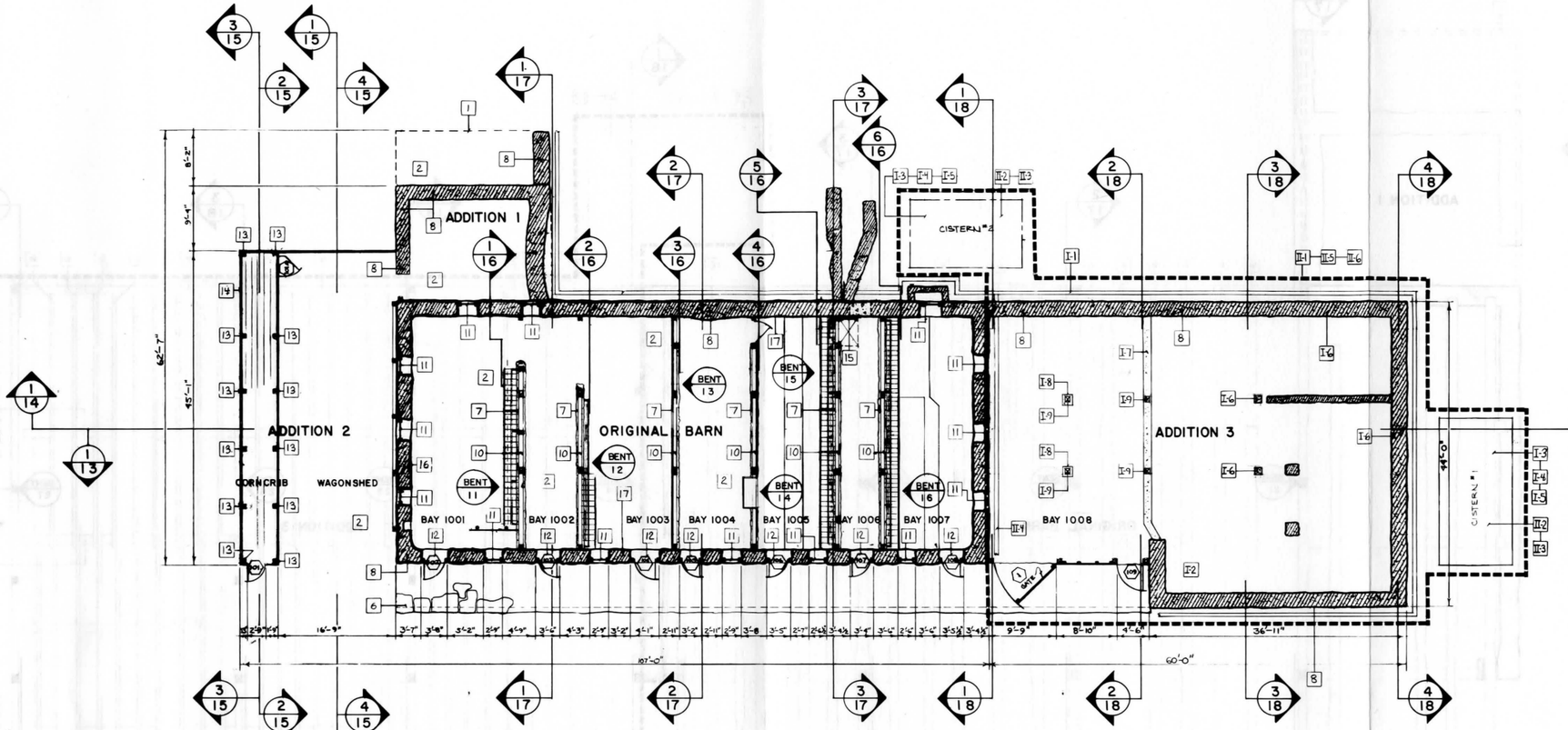
IIB VIEW FROM NORTHEAST

WOOD STRUCTURES OF ADDITIONS 1 AND 3
DEMOLISHED
ADDITION 3 FOUNDATION DEMOLISHED
DORMER AND ROOF
VENTILATORS REMOVED

ALTERNATIVES FOR THE STABILIZATION OF THE PIPER BARN

PREPARED SIEKKINEN	DRAWING NO 302 25000
DESIGNED SIEKKINEN	
DRAWN DONALD	PCIB PKG. 215
CHECKED 8-18-82 DATE	SHEET 4 OF 18

GPO: 1977 777-246



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. DEMOLISH WOOD STRUCTURE OF ADDITION 1.
2. DESTROY RODENT TUNNELS.
3. INSTALL FOUNDATION DRAIN.
4. CLEAN WHITEWASH FROM STONE WALL BY APPROVED METHOD.
5. INSPECT STONEWORK AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
6. RESTORE STONE WALKWAY.
7. RESTORE STONE FOUNDATION WALL.
8. REPAIR AREAS OF DETERIORATED STONEWORK.
9. REPOINT MORTAR JOINTS.
10. REPAIR BASEMENT STORY BENT.
11. REPAIR WALL VENTILATOR AND FRAME AND COAT WITH WHITE-WASH.
12. REPAIR DOOR AND FRAME AND COAT WITH WHITEWASH.
13. CUT OFF AND REPLACE BOTTOM OF POST.
14. CUT OFF AND REPLACE BOTTOM OF BOARD.
15. RESTORE LADDER.
16. PREPARE AND COAT WITH WHITEWASH BASEMENT CEILING AND WALLS.
17. REPLACE MISSING STONE.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

I-1. INSTALL FOUNDATION DRAIN.
I-2. EXCAVATE AND LOWER GRADE TO INDICATED LEVEL.
I-3. INSPECT INTERIOR OF CISTERN AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
I-4. REPAIR AND MAKE WATERPROOF THE INTERIOR OF THE CISTERN.
I-5. REPAIR THE EXTERIOR OF THE CISTERN.
I-6. CONSTRUCT REINFORCED CONCRETE FOUNDATION FOOTING AND PIER.
I-7. CONSTRUCT REINFORCED CONCRETE RETAINING WALL.
I-8. CONSTRUCT REINFORCED CONCRETE FOOTING FOR POST.
I-9. REPLACE POST.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

II-1. DEMOLISH STONE FOUNDATION OF ADDITION 3.
II-2. DEMOLISH CISTERN.
II-3. EXCAVATE SITE OF CISTERN.
II-4. INSTALL FOUNDATION DRAIN.
II-5. GRADE SITE OF ADDITION 3 TO INDICATED LEVEL.
II-6. PREPARE SOIL AND PLANT GROUND COVER.

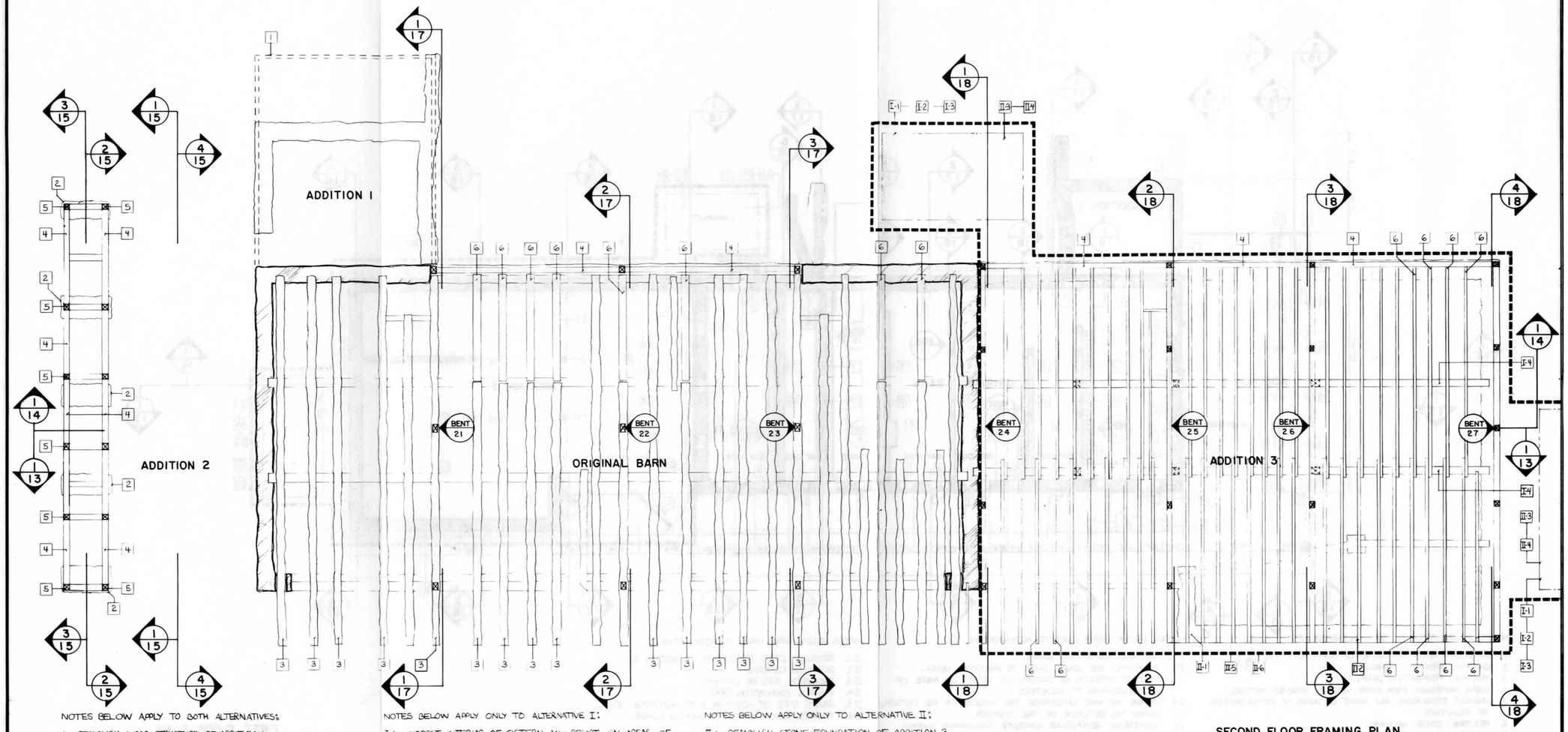
GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

FIRST FLOOR PLAN

8 0 8 16 24
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED	SIEKKINEN
DESIGNED	WARSH
DRAWN	SIEKKINEN
CHECKED	DONALD
DATE	8-18-82
DRAWING NO.	302 25000
PCTP PKG.	215
SHEET	5 OF 18



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. DEMOLISH WOOD STRUCTURE OF ADDITION 1.
2. REPOINT MORTAR JOINTS.
3. REMOVE DETERIORATED WOOD, INSTALL REINFORCEMENT, AND RESTORE EXTERIOR FORM.
4. REPLACE SILL.
5. REPLACE BOTTOM OF POST.
6. REPLACE FLOOR JOIST.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

I-1. INSPECT INTERIOR OF CISTERN AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
I-2. REPAIR AND MAKE WATERPROOF THE INTERIOR OF THE CISTERN.
I-3. REPAIR THE EXTERIOR OF THE CISTERN.
I-4. REPLACE GIRDER.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

II-1. DEMOLISH STONE FOUNDATION OF ADDITION 3.
II-2. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-3. DEMOLISH CISTERN.
II-4. EXCAVATE SITE OF CISTERN.
II-5. GRADE SITE OF ADDITION 3 TO INDICATE LEVEL.
II-6. PREPARE SOIL AND PLANT GROUND COVER.

GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

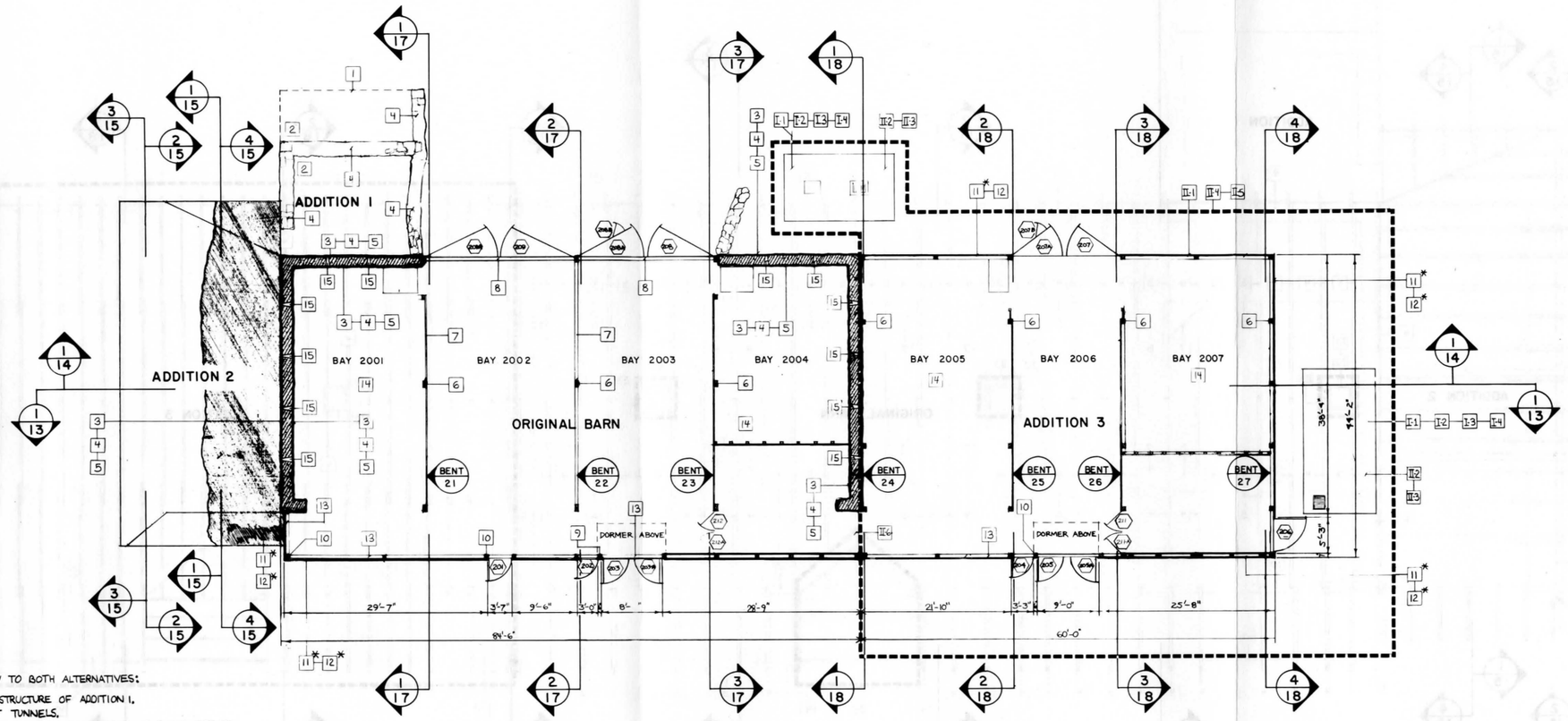
SECOND FLOOR FRAMING PLAN

10 0 10 20
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
SIEKKINEN	PCIP PKG. 215
DRAWN	SHEET 6
DONALD	OF 18
CHECKED	
8-18-82	
DATE	

☆ GPO: 1977 777-099



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. DEMOLISH WOOD STRUCTURE OF ADDITION 1.
2. DESTROY RODENT TUNNELS.
3. INSPECT STONEWORK AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
4. REPAIR AREAS OF DETERIORATED STONEWORK.
5. REPOINT MORTAR JOINTS.
6. REPAIR UPPER STORY BENT.
7. RESTORE PARTITION WALL.
8. REPLACE SILL.
9. CUT OFF AND REPLACE BOTTOM OF POST.
10. REPLACE POST.
11. CUT OFF AND REPLACE BOTTOM OF BOARD.*
12. REPLACE BOARD.*
13. REPLACE PLATE.
14. REPLACE FLOOR BOARDS.
15. INSTALL SCREEN IN OPENING.
16. PREPARE EXTERIOR WOOD SURFACES AND COVER WITH WHITE-WASH.

* SEE ELEVATION DRAWINGS FOR SPECIFIC LOCATIONS AND TREATMENTS IN REFERENCE TO THIS NOTE.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

I-1. INSPECT INTERIOR OF CISTERN AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
I-2. REPAIR AND MAKE WATERPROOF THE INTERIOR OF THE CISTERN.
I-3. REPAIR THE EXTERIOR OF THE CISTERN.
I-4. CONNECT THE DOWNSPOUT TO THE CISTERN.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-2. DEMOLISH CISTERN.
II-3. EXCAVATE SITE OF CISTERN.
II-4. GRADE SITE OF ADDITION 3 TO INDICATED LEVEL.
II-5. PREPARE SOIL AND PLANT GROUND COVER.
II-6. CONSTRUCT INFILL FRAMEWORK AND COVER WITH VERTICAL SIDING BOARDS.

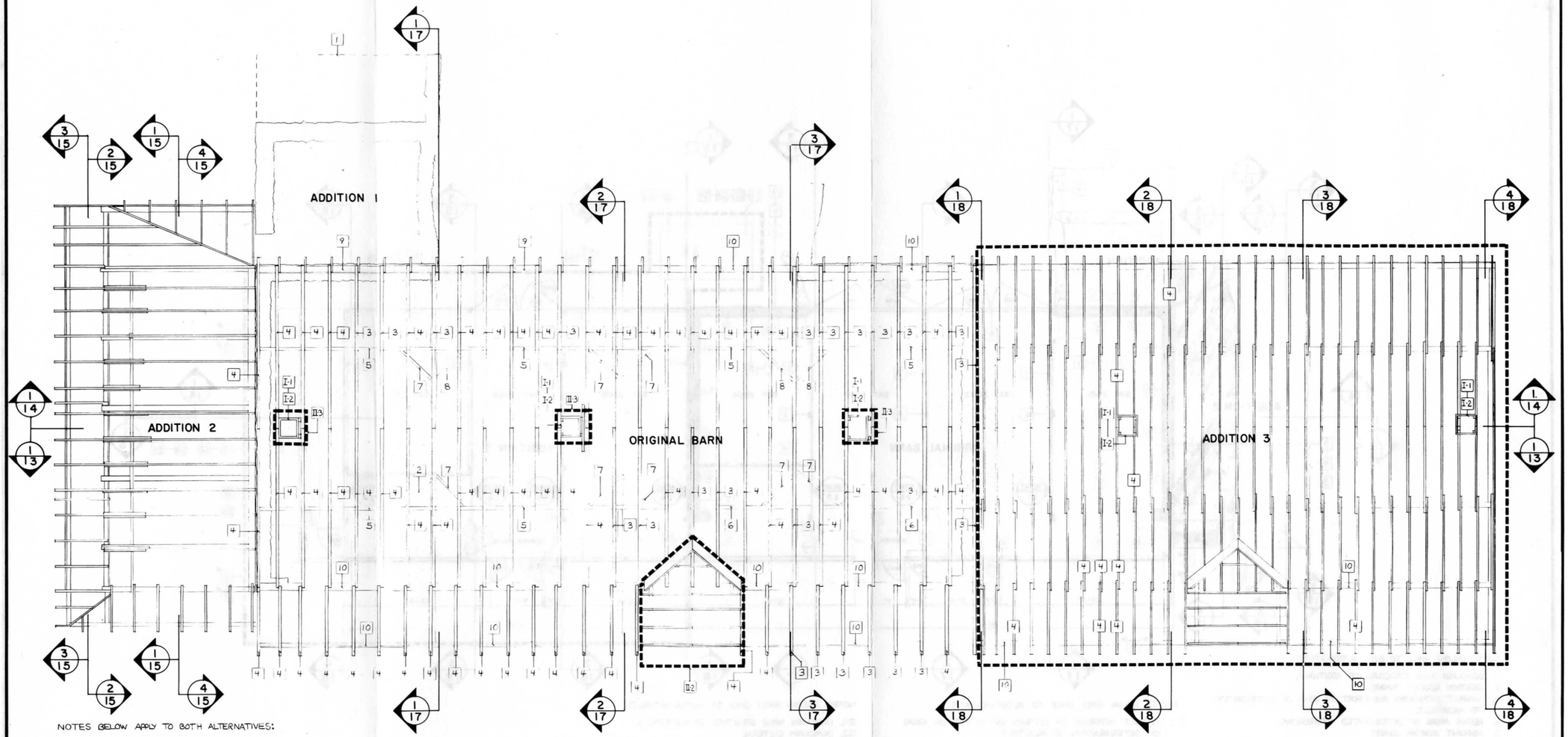
GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

SECOND FLOOR PLAN

8 0 8 16 24
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
MARSH SIEKKINEN	PCIP PKG. 215
DRAWN	SHEET 7
DONALD	OF 18
CHECKED	
8-18-82	
DATE	



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. REMOVE WOOD STRUCTURE OF ADDITION 1.
2. INSTALL METAL BAND TO DETER CHECKING.
3. INSPECT RAFTER, REPORT ON AREAS OF DETERIORATION TO ARCHITECT, AND REPLACE IF DETERIORATED.
4. REPLACE DETERIORATED RAFTER.
5. INSPECT PURLIN, REPORT ON AREAS OF DETERIORATION TO ARCHITECT, AND REPLACE IF DETERIORATED.
6. REPLACE DETERIORATED PURLIN.
7. INSPECT BRACE, REPORT ON AREAS OF DETERIORATION TO ARCHITECT, AND REPLACE IF DETERIORATED.
8. REPLACE DETERIORATED BRACE.
9. INSPECT PLATE, REPORT ON AREAS OF DETERIORATION TO ARCHITECT, AND REPLACE IF DETERIORATED.
10. REPLACE DETERIORATED PLATE.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

I-1. INSPECT ROOF VENTILATOR AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
I-2. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATOR.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-2. REMOVE WALL DORMER, REFRAME AND REHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-3. REMOVE ROOF VENTILATOR, REFRAME AND REHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.

GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

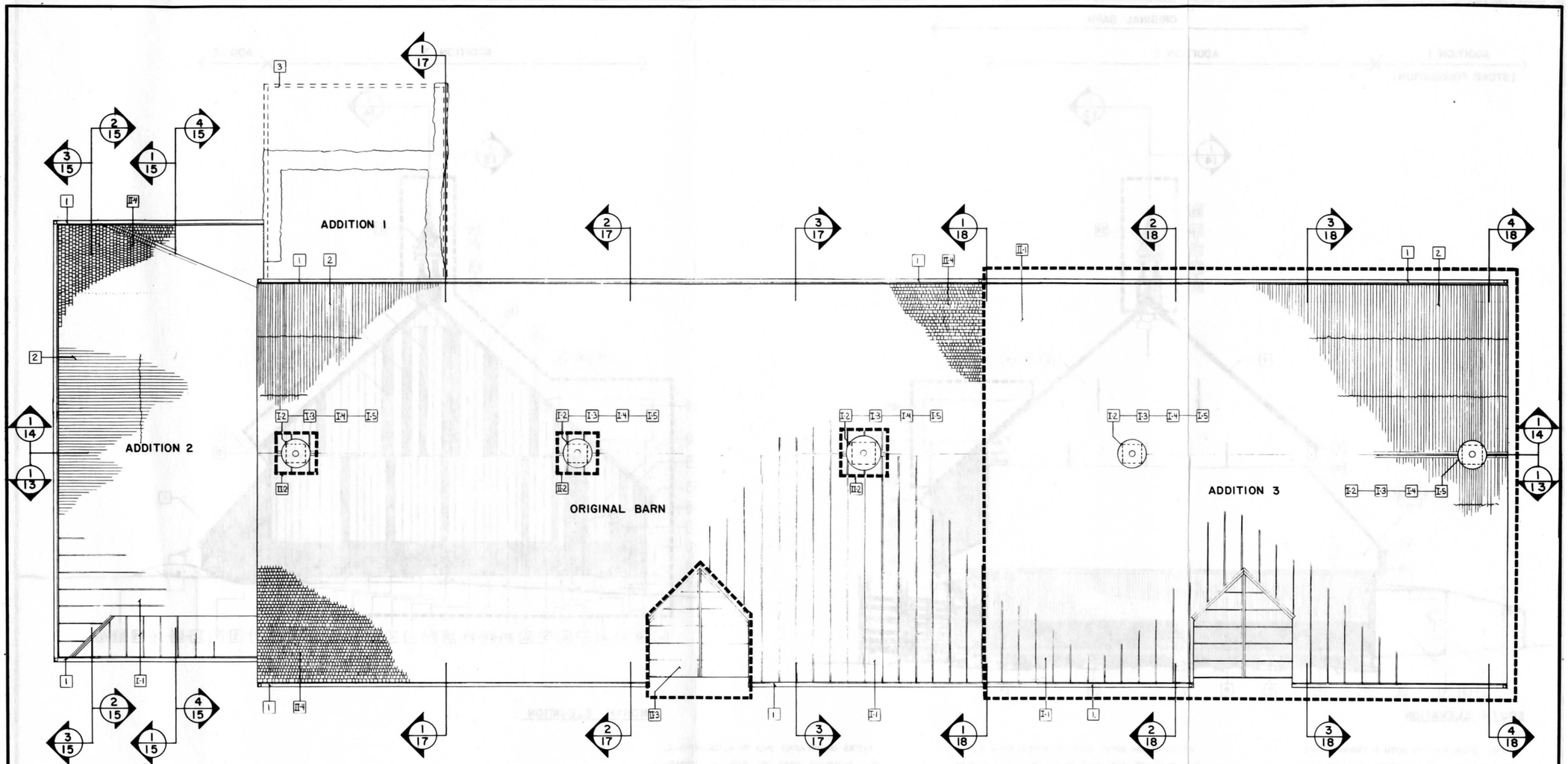
ROOF FRAMING PLAN

10 0 10 20
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
HARTMAN SIEKKINEN	PCIP PKG. 215
DRAWN	SHEET 8
DONALD	OF 18
CHECKED	
8-18-82	
DATE	

☆ GPO: 1977 777-999



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. REPLACE GUTTER AND DOWNSPOUTS.
2. REMOVE EXISTING ROOF COVERING AND UNDERLYING NAILERS.
3. REMOVE WOOD STRUCTURE OF ADDITION 1.

GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

I-1. REPLACE NAILERS AND REPLACE EXISTING ROOF COVERING WITH STANDING SEAM METAL ROOF.
I-2. INSPECT ROOF VENTILATOR AND REPORT ON AREAS OF DETERIORATION TO THE ARCHITECT.
I-3. REPAIR DETERIORATED METAL OF ROOF VENTILATOR.
I-4. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATOR.
I-5. PREPARE METAL SURFACES AND PAINT ROOF VENTILATOR.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-2. REMOVE ROOF VENTILATOR RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-3. REMOVE WALL DORMER, RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-4. REPLACE NAILERS AND REPLACE EXISTING ROOF COVERING WITH WOOD SHINGLES.

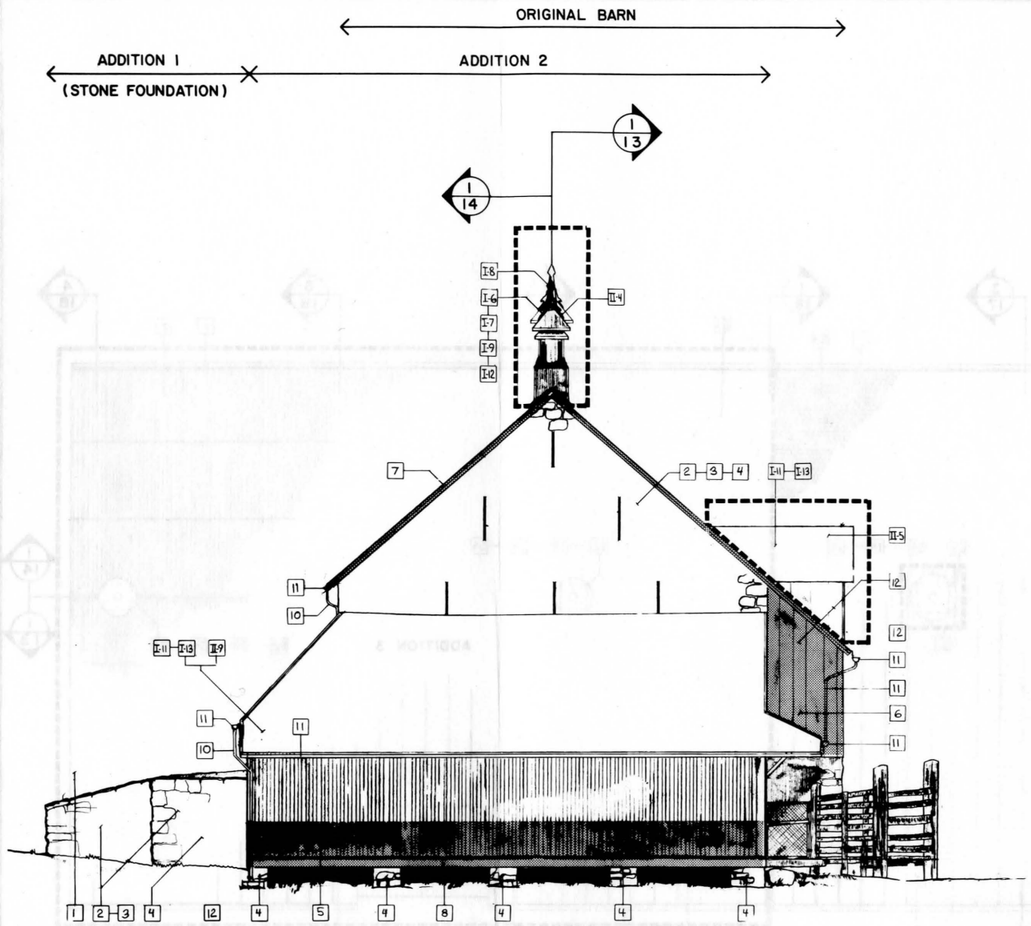
ROOF PLAN

10 0 10 20
SCALE OF FEET

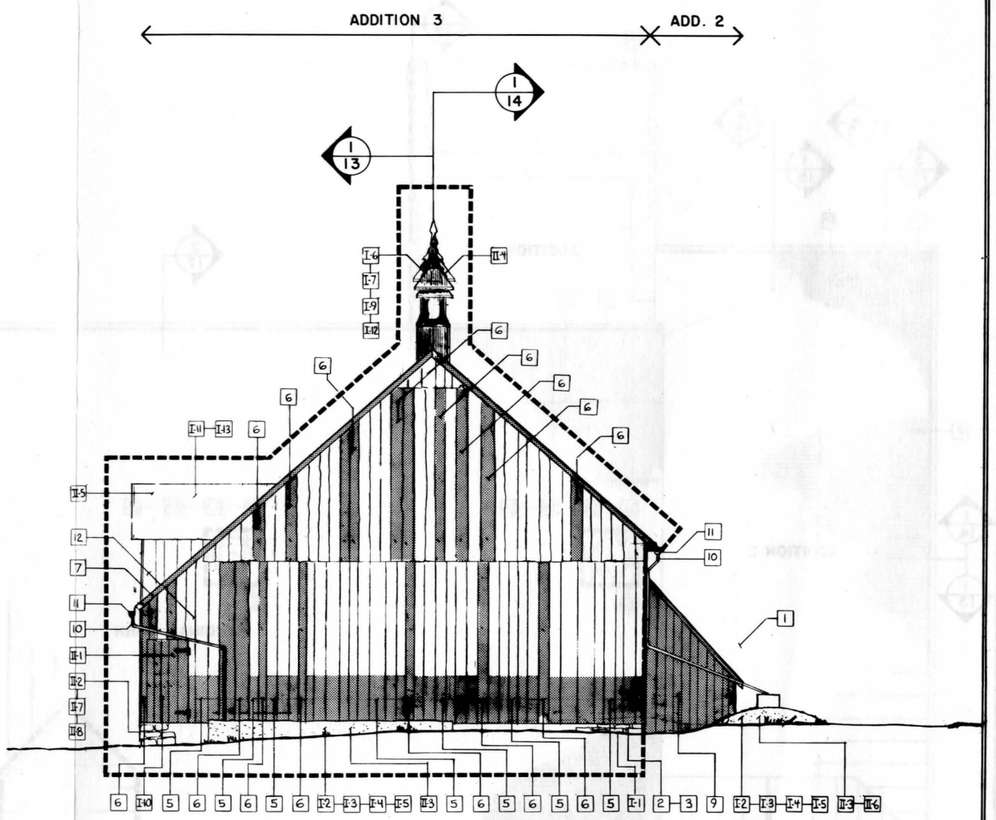
0 5m
METRIC SCALE

PREPARED SIEKKINEN	DRAWING NO. 302 25000
DESIGNED SHAFER SIEKKINEN	PCTP PKG. 215
DRAWN DONALD	SHEET 9
CHECKED	OF 18
8-18-82 DATE	

GPO: 1977 777-388



SOUTH ELEVATION



NORTH ELEVATION

NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. DEMOLISH WOOD STRUCTURE OF ADDITION 1.
2. INSPECT STONEWORK AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
3. REPAIR AREAS OF DETERIORATED STONEWORK.
4. REPOINT MORTAR JOINTS.
5. CUT OFF AND REPLACE DETERIORATED BOTTOM OF BOARD.
6. REPLACE VERTICAL SIDING BOARD.
7. REPLACE RAKE BOARD.
8. REPLACE SILL.
9. CONSTRUCT INFILL FRAMEWORK AND COVER WITH SIDING BOARDS.
10. REPLACE DOWNSPOUT.
11. REPLACE GUTTER AND HANGERS.
12. PREPARE EXTERIOR WOOD SURFACES AND COVER WITH WHITEWASH.
13. INSTALL LIGHTNING RODS AND CONNECT TO GROUND.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I.

I-1. EXCAVATE AND LOWER GRADE TO INDICATED LEVEL.
I-2. INSPECT INTERIOR OF CISTERN AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
I-3. REPAIR AND MAKE WATERPROOF THE INTERIOR OF THE CISTERN.
I-4. REPAIR THE EXTERIOR OF THE CISTERN.
I-5. CONNECT DOWNSPOUT TO THE CISTERN.
I-6. INSPECT ROOF VENTILATORS AND REPORT ON AREAS OF DETERIORATION TO THE ARCHITECT.
I-7. REPAIR DETERIORATED METAL OF ROOF VENTILATORS.
I-8. REPLICATE MISSING METAL FINIAL OF ROOF VENTILATOR.
I-9. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATORS.
I-10. REPLACE DOOR.
I-11. REPLACE EXISTING ROOF WITH STANDING SEAM METAL ROOF.
I-12. PREPARE METAL SURFACES AND PAINT ROOF VENTILATOR.
I-13. PREPARE SURFACE AND PAINT STANDING SEAM METAL ROOF.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II.

II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-2. DEMOLISH STONE FOUNDATION OF ADDITION 3.
II-3. DEMOLISH CISTERN.
II-4. REMOVE ROOF VENTILATOR, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-5. REMOVE WALL DORMER, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-6. EXCAVATE SITE OF CISTERN.
II-7. GRADE SITE OF ADDITION 3 TO INDICATED LEVEL.
II-8. PREPARE SOIL AND PLANT GROUND COVER ON SITE OF ADDITION 3.
II-9. REPLACE EXISTING ROOF WITH WOOD SHINGLE ROOF.

GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

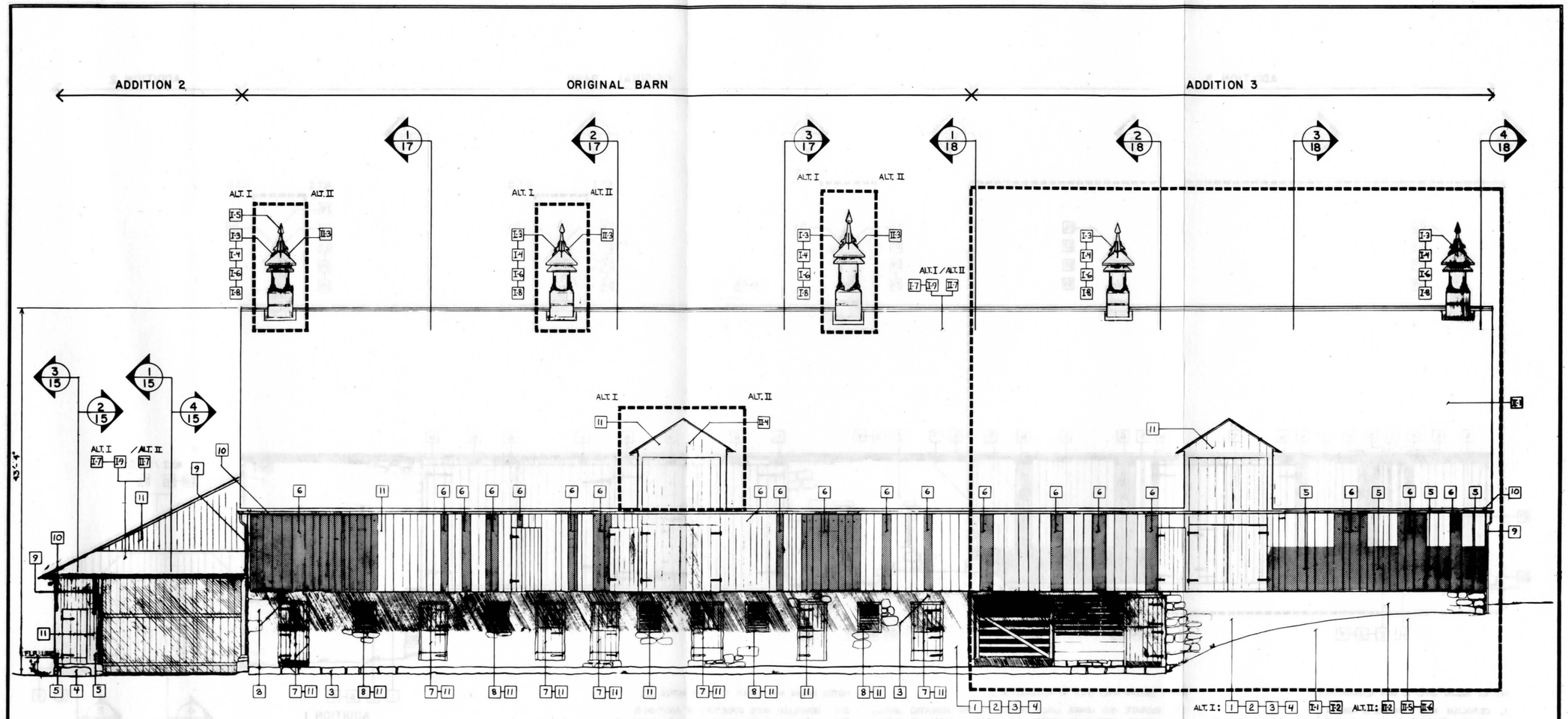
NORTH AND SOUTH ELEVATIONS

10 0 10 20
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
SIEKKINEN	
DRAWN	PCTP PKG. / SHEET
DONALD	215 / 10
CHECKED	of 18
8-18-82	
DATE	

GPO 1977 777-888



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. CLEAN WHITEWASH FROM STONE WALL BY APPROVED METHOD.
2. INSPECT STONEWORK AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
3. REPAIR AREAS OF DETERIORATED STONEWORK.
4. REPOINT MORTAR JOINTS.
5. CUT OFF AND REPLACE DETERIORATED BOTTOM OF BOARD.
6. REPLACE VERTICAL SIDING BOARD.
7. REPAIR DOOR AND FRAME.
8. REPAIR WALL VENTILATOR AND FRAME.
9. REPLACE DOWNSPOUT.
10. REPLACE GUTTER AND HANGERS.
11. PREPARE EXTERIOR WOOD SURFACES AND COVER WITH WHITEWASH.
12. INSTALL LIGHTNING RODS AND CONNECT TO GROUND.

GENERAL NOTES:
THE ADDITIONS, AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I.

I-1. RAISE GRADE TO INDICATED LEVEL.
I-2. PREPARE SOIL AND PLANT GROUND COVER.
I-3. INSPECT ROOF VENTILATORS AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
I-4. REPAIR DETERIORATED METAL OF ROOF VENTILATORS.
I-5. REPLICATE MISSING METAL FINIAL OF ROOF VENTILATOR.
I-6. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATOR.
I-7. REPLACE EXISTING ROOF WITH STANDING SEAM METAL ROOF.
I-8. PREPARE METAL SURFACES AND PAINT ROOF VENTILATOR.
I-9. PREPARE SURFACE AND PAINT STANDING SEAM METAL ROOF.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II

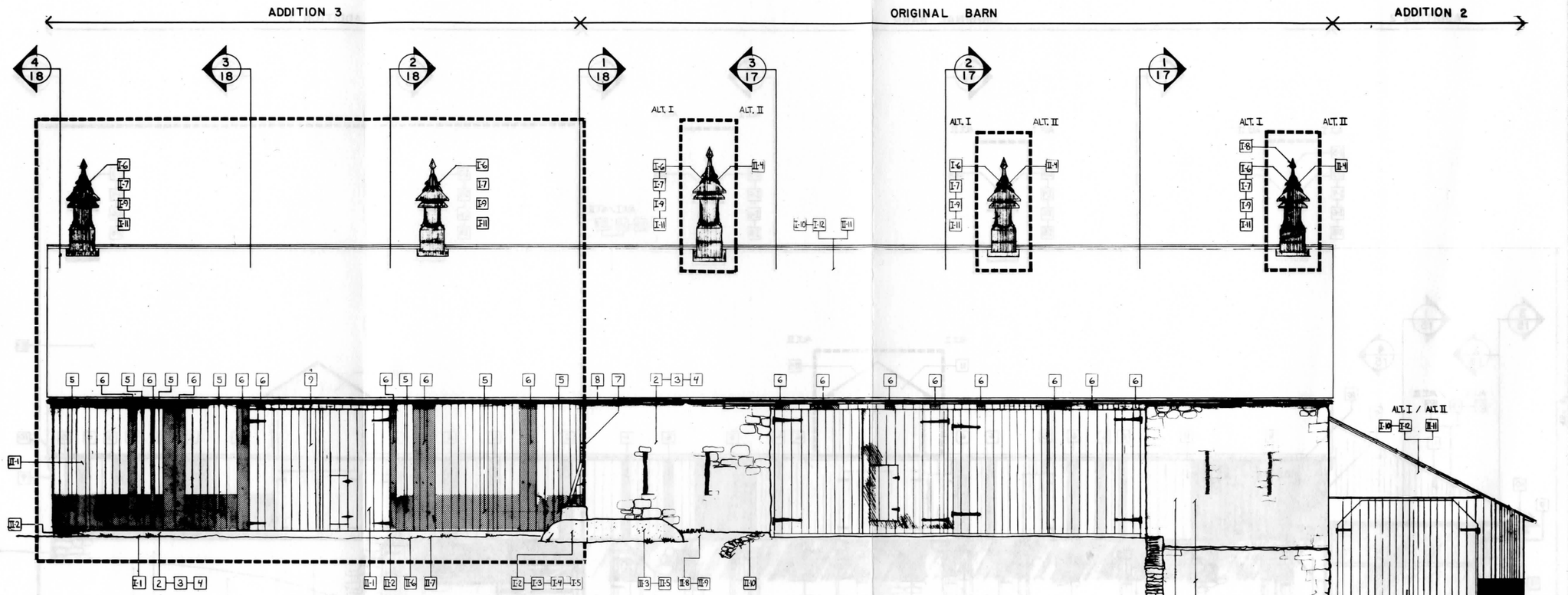
II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-2. DEMOLISH STONE FOUNDATION OF ADDITION 3.
II-3. REMOVE ROOF VENTILATOR, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-4. REMOVE WALL DORMER, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-5. REGRADE SITE OF ADDITION 3 TO INDICATED LEVEL.
II-6. PREPARE SOIL AND PLANT GROUND COVER ON SITE OF ADDITION 3.
II-7. REPLACE EXISTING ROOF WITH WOOD SHINGLE ROOF.

EAST ELEVATION

10 0 5 10 15
SCALE OF FEET

0 3m
METRIC SCALE

PREPARED	SIEKKINEN
DESIGNED	MARSH
DRAWN	SIEKKINEN
CHECKED	DONALD
DATE	8-18-82
DRAWING NO.	302 25000
PCTP PKG.	215
SHEET	11 OF 18



WEST ELEVATION

SCALE OF FEET: 10 0 10 20

METRIC SCALE: 0 5m

NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. DEMOLISH WOOD STRUCTURE OF ADDITION 1.
2. INSPECT STONEWORK AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
3. REPAIR AREAS OF DETERIORATED STONEWORK.
4. REPOINT MORTAR JOINTS.
5. CUT OFF AND REPLACE DETERIORATED BOTTOM OF BOARD.
6. REPLACE VERTICAL SIDING BOARD.
7. REPLACE DOWNSPOUT.
8. REPLACE GUTTER AND HANGERS.
9. PREPARE EXTERIOR WOOD SURFACES AND COVER WITH WHITEWASH.
10. INSTALL LIGHTNING RODS AND CONNECT TO GROUND.

GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

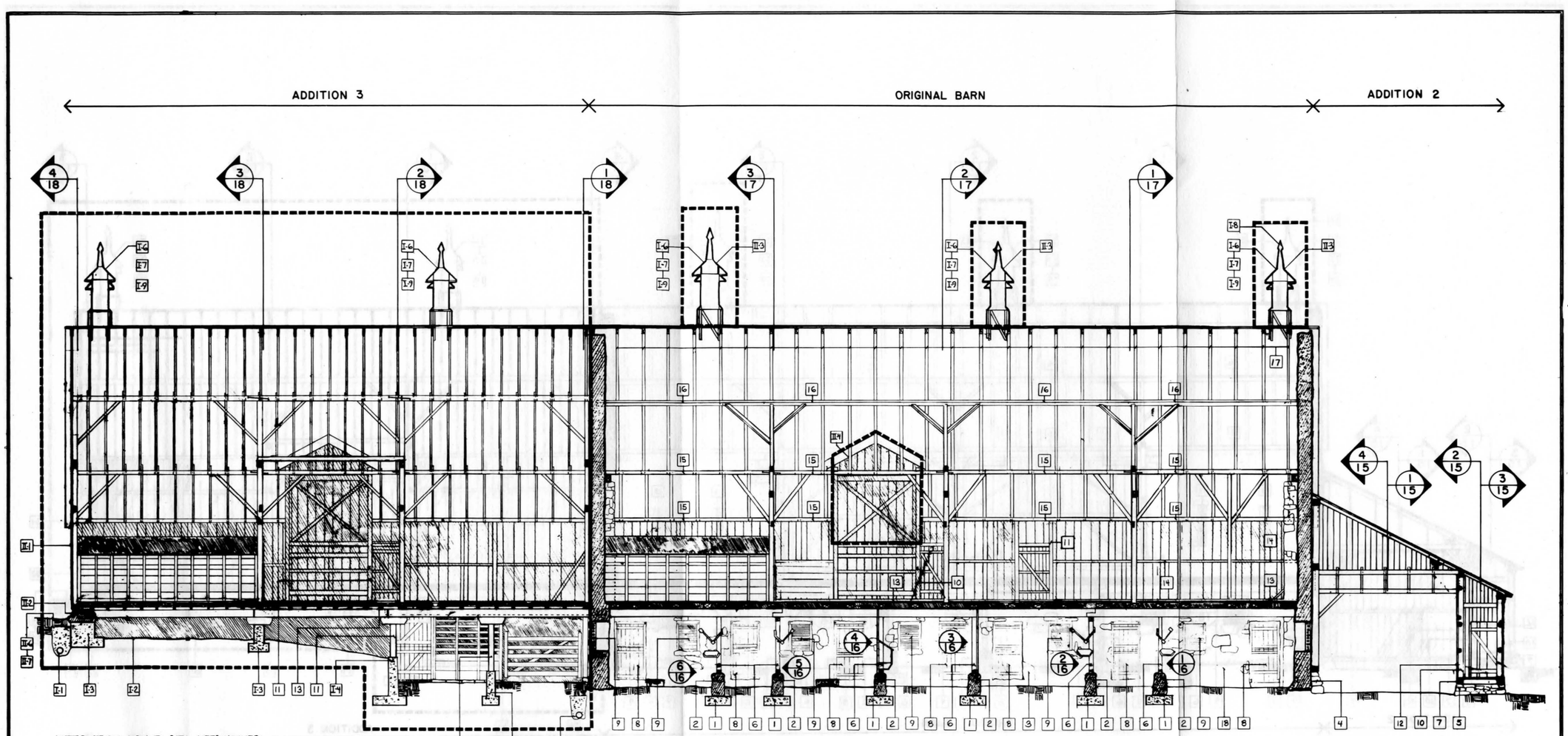
- I-1. EXCAVATE AND LOWER GRADE OF SOIL TO THE INDICATED LEVEL.
- I-2. INSPECT INTERIOR OF CISTERN AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
- I-3. REPAIR AND MAKE WATERPROOF THE INTERIOR OF THE CISTERN.
- I-4. REPAIR THE EXTERIOR OF THE CISTERN.
- I-5. CONNECT THE DOWNSPOUT TO THE CISTERN.
- I-6. INSPECT ROOF VENTILATORS AND REPORT ON AREAS OF DETERIORATION TO THE ARCHITECT.
- I-7. REPAIR DETERIORATED METAL OF ROOF VENTILATORS.
- I-8. REPLICATE MISSING METAL FINIAL OF ROOF VENTILATORS.
- I-9. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATORS.
- I-10. REPLACE EXISTING ROOF WITH STANDING SEAM METAL ROOF.
- I-11. PREPARE METAL SURFACES AND PAINT ROOF VENTILATOR.
- I-12. PREPARE SURFACE AND PAINT STANDING SEAM METAL ROOF.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

- II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
- II-2. DEMOLISH STONE FOUNDATION OF ADDITION 3.
- II-3. DEMOLISH CISTERN.
- II-4. REMOVE ROOF VENTILATOR, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
- II-5. EXCAVATE SITE OF CISTERN.
- II-6. GRADE SITE OF ADDITION 3 TO INDICATED LEVEL.
- II-7. PREPARE SOIL AND PLANT GROUND COVER ON SITE OF ADDITION 3.
- II-8. INSPECT BARN STONEWORK EXPOSED BY CISTERN REMOVAL AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
- II-9. REPAIR AREAS OF DETERIORATED STONEWORK IDENTIFIED ABOVE.
- II-10. STABILIZE NORTH BANK WALL.
- II-11. REPLACE EXISTING ROOF WITH WOOD SHINGLE ROOF.

PREPARED	DRAWING NO. 302 25 000
SIEKKINEN	
DESIGNED	PCTF PKG. —
SIEKKINEN	SHEET 12
DRAWN	—
DONALD	— OF 18
CHECKED 8-18-82	
DATE	

GPO 1977 777-000



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. CONSTRUCT REINFORCED CONCRETE FOOTING.
2. RESTORE STONE FOUNDATION WALL.
3. REPLACE MISSING STONE.
4. REPAIR AREAS OF DETERIORATED STONEWORK.
5. REPOINT MORTAR JOINTS.
6. REPAIR BASEMENT STORY BENT.
7. REPLACE SILL.
8. REPAIR DOOR AND FRAME AND COAT WITH WHITEWASH.
9. REPAIR WALL VENTILATOR AND FRAME AND COAT WITH WHITEWASH.
10. CUT OFF AND REPLACE BOTTOM OF POST.
11. REPLACE POST.
12. CUT OFF AND REPLACE BOTTOM OF BOARD.
13. REPLACE PLATE.
14. REPAIR GIRT.
15. REPLACE RAFTER PLATE.
16. REPLACE PURLIN
17. REPLACE RAFTERS AND NAILERS.
18. PREPARE AND COAT WITH WHITEWASH THE BASEMENT CEILING AND WALLS.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

I-1. INSTALL FOUNDATION DRAIN.
I-2. EXCAVATE AND LOWER GRADE TO INDICATED LEVEL.
I-3. CONSTRUCT REINFORCED CONCRETE FOUNDATION FOOTING AND PIER.
I-4. CONSTRUCT REINFORCED CONCRETE RETAINING WALL.
I-5. CONSTRUCT REINFORCED CONCRETE FOOTING FOR POST.
I-6. INSPECT ROOF VENTILATOR AND REPORT ON AREAS OF DETERIORATION TO THE ARCHITECT.
I-7. REPAIR DETERIORATED METAL OF ROOF VENTILATOR.
I-8. REPLICATE MISSING METAL FINIAL OF ROOF VENTILATOR.
I-9. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATOR.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II.

II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-2. DEMOLISH STONE FOUNDATION OF ADDITION 3.
II-3. REMOVE ROOF VENTILATOR, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-4. REMOVE WALL DORMER, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-5. INSTALL FOUNDATION DRAIN.
II-6. GRADE SITE OF ADDITION 3 TO INDICATED LEVEL.
II-7. PREPARE SOIL AND PLANT GROUND COVER.

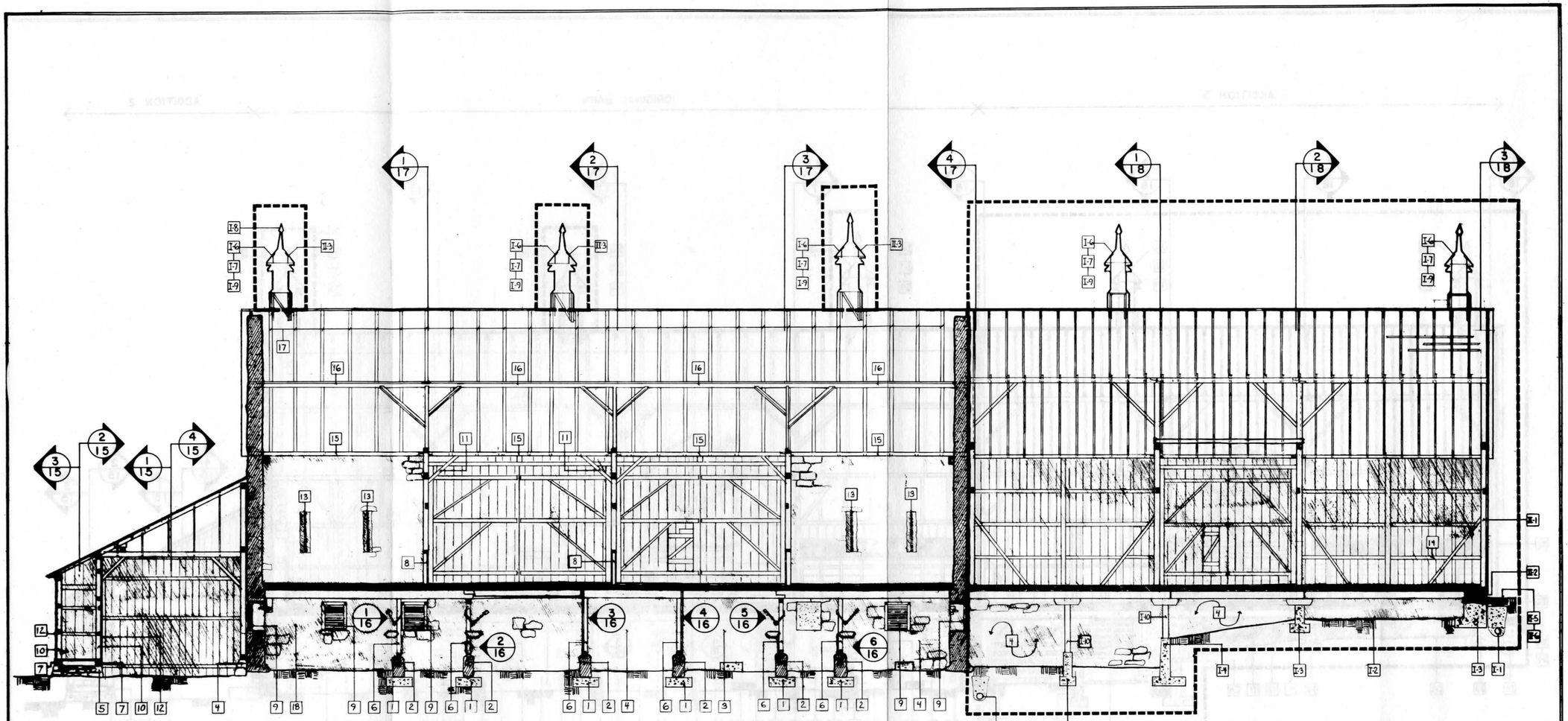
GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

SECTION 1/13 EAST LONGITUDINAL

10 0 10 20
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED SIEKKINEN	DRAWING NO. 302 25000
DESIGNED LUCAS ~~SIEKKINEN~~	PCTP PKG. 215
DRAWN DONALD	SHEET 13
CHECKED 8-18-82 DATE	OF 18



NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. CONSTRUCT REINFORCED CONCRETE FOOTING.
2. RESTORE STONE FOUNDATION WALL.
3. REPLACE MISSING STONE.
4. REPAIR AREAS OF DETERIORATED STONEWORK.
5. REPOINT MORTAR JOINTS.
6. REPAIR BASEMENT STORY BENT.
7. REPLACE SILL.
8. RESTORE PARTITION WALL.
9. REPAIR WALL VENTILATOR AND FRAME AND COAT WITH WHITEWASH.
10. CUT OFF AND REPLACE BOTTOM OF POST.
11. RESTORE BRACE.
12. CUT OFF AND REPLACE BOTTOM OF BOARD.
13. INSTALL SCREEN IN OPENING.
14. REPLACE GIRT.
15. REPLACE RAFTER PLATE.
16. REPLACE PURLIN.
17. REPLACE RAFTERS AND NAILERS.
18. PREPARE AND COAT WITH WHITEWASH BASEMENT CEILING AND WALLS.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

I-1. INSTALL FOUNDATION DRAIN.
I-2. EXCAVATE AND LOWER GRADE TO INDICATED LEVEL.
I-3. CONSTRUCT REINFORCED CONCRETE FOUNDATION FOOTING AND PIER.
I-4. CONSTRUCT REINFORCED CONCRETE RETAINING WALL.
I-5. CONSTRUCT REINFORCED CONCRETE FOOTING FOR POST.
I-6. INSPECT ROOF VENTILATOR AND REPORT ON AREAS OF DETERIORATION TO THE ARCHITECT.
I-7. REPAIR DETERIORATED METAL OF ROOF VENTILATOR.
I-8. REPLICATE MISSING METAL FINIAL OF ROOF VENTILATOR.
I-9. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATOR.
I-10. REPLACE POST.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

II-1. DEMOLISH WOOD STRUCTURE OF ADDITION 3.
II-2. DEMOLISH STONE FOUNDATION OF ADDITION 3.
II-3. REMOVE ROOF VENTILATOR, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
II-4. INSTALL FOUNDATION DRAIN.
II-5. GRADE SITE OF ADDITION 3 TO INDICATED LEVEL.
II-6. PREPARE SOIL AND PLANT GROUND COVER.

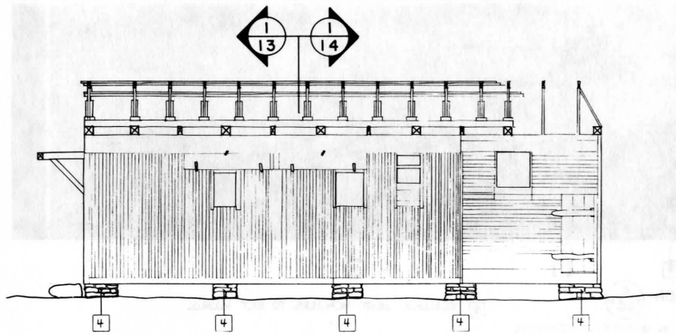
GENERAL NOTES:
THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN. IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

SECTION 1/14 WEST LONGITUDINAL

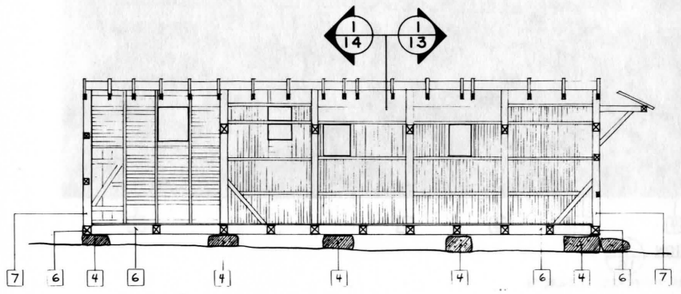
10 0 10 20
SCALE OF FEET

0 5m
METRIC SCALE

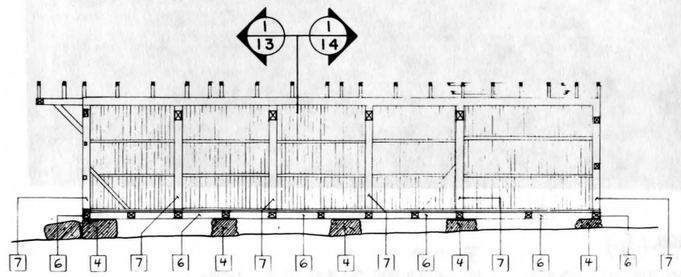
PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
MARSH	PROJ. PKG. 215
DRAWN	SHEET 14
DONALD	OF 18
CHECKED	
8-18-82	
DATE	



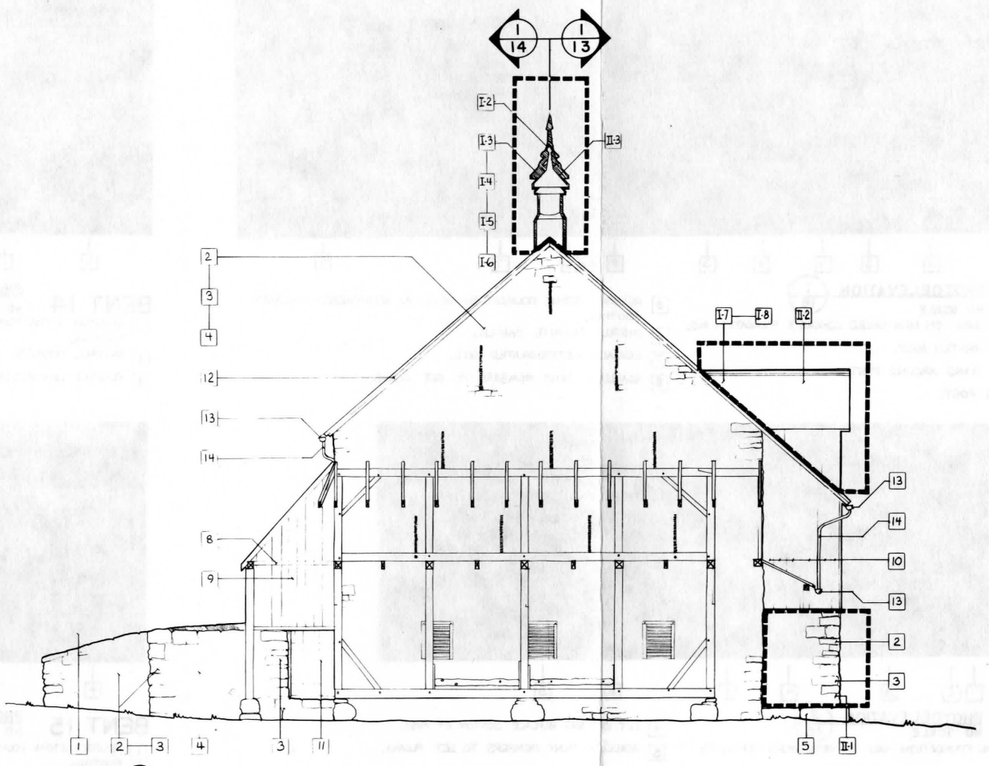
SECTION 1/15 CORNCRIB EXTERIOR NORTH WALL



SECTION 2/15 CORNCRIB INTERIOR NORTH WALL



SECTION 3/15 CORNCRIB INTERIOR SOUTH WALL



SECTION 4/15 WAGONSHED BENT

NOTES BELOW APPLY TO BOTH ALTERNATIVES:

1. DEMOLISH WOOD STRUCTURE OF ADDITION 1.
2. INSPECT STONEWORK AND REPORT ON AREAS OF DETERIORATION TO ARCHITECT.
3. REPAIR AREAS OF DETERIORATED STONEWORK.
4. REPOINT MORTAR JOINTS.
5. RESTORE STONE WALKWAY.
6. REPLACE SILL.
7. CUT OFF AND REPLACE BOTTOM OF POST.
8. CONSTRUCT INFILL FRAMEWORK.
9. COVER FRAMEWORK WITH VERTICAL SIDING BOARDS.
10. REPLACE VERTICAL SIDING BOARDS.
11. INSTALL NEW DOOR IN OPENING.
12. REPLACE RAKE BOARD.
13. REPLACE GUTTER.
14. REPLACE DOWNSPOUT.

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

- I-1. CLEAN WHITEWASH FROM STONE WALL BY APPROVED METHOD.
- I-2. REPLICATE MISSING METAL FINIAL OF ROOF VENTILATOR.
- I-3. INSPECT ROOF VENTILATOR AND REPORT ON AREAS OF DETERIORATION
- I-4. REPAIR DETERIORATED METAL OF ROOF VENTILATOR.
- I-5. REPAIR DETERIORATED WOOD FRAMEWORK OF ROOF VENTILATOR.
- I-6. PREPARE METAL SURFACES AND PAINT ROOF VENTILATOR.
- I-7. REPLACE EXISTING ROOF WITH STANDING SEAM METAL ROOF.
- I-8. PREPARE SURFACE AND PAINT STANDING SEAM METAL ROOF.

NOTES BELOW APPLY ONLY TO ALTERNATIVE II:

- II-1. DEMOLISH STONE FOUNDATION OF ADDITION 3.
- II-2. REMOVE WALL DORMER, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.
- II-3. REMOVE ROOF VENTILATOR, REFRAME AND RESHEATH ROOF OPENING, AND COVER WITH WOOD SHINGLES.

GENERAL NOTES:

THE ADDITIONS AND FEATURES ENCLOSED BY THE DASHED LINES ARE TO BE REMOVED IF ALTERNATIVE II IS CHOSEN, IN THIS CASE, FOR THE AREAS ENCLOSED BY THE DASHED LINES, ONLY ALTERNATIVE II NOTES WILL BE APPLICABLE.

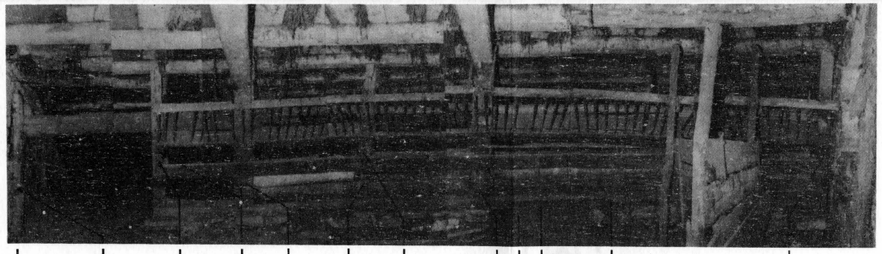
ADDITION 2 SECTIONS

10 0 10 20
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
DRAFTER	PCIP PKG. / SHEET
SIEKKINEN	215 / 15
DRAWN	OF 18
DONALD	
CHECKED	
8-18-82	
DATE	

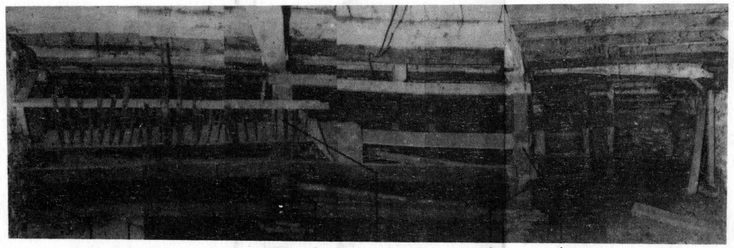
GPO: 1977 777-388



1-6 3 3 8 4 8 3 8 5 6 7 8

BENT 11 PHOTOELEVATION 1/16 NO SCALE

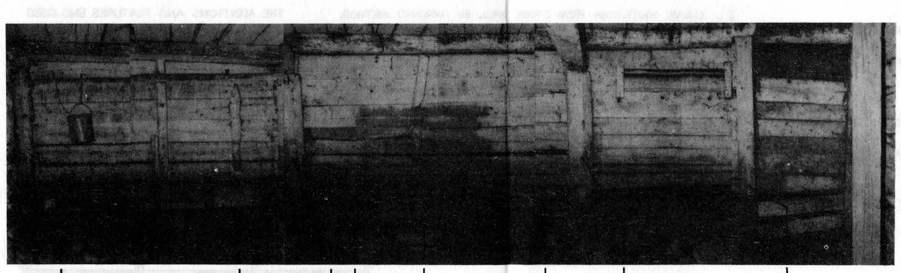
1. INSTALL STONE BASE ON REINFORCED CONCRETE FOUNDATION PAD.
2. REPLACE DETERIORATED POST.
3. INSTALL IRON BAND AROUND POST.
4. FILL VOID IN POST.
5. RESTORE STONE FOUNDATION WALL ON REINFORCED CONCRETE FOOTING.
6. INSTALL TERMITE SHIELD.
7. REPLACE DETERIORATED SILL.
8. REALLIGN BENT MEMBERS TO SET PLUMB.



5 1-2 3 4 5 4 5

BENT 12 PHOTOELEVATION 2/16 NO SCALE

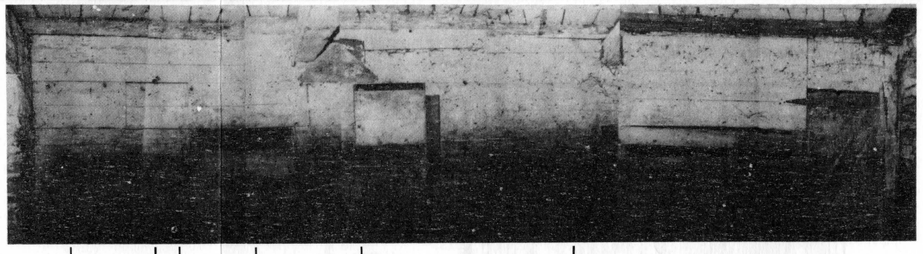
1. RESTORE STONE FOUNDATION WALL ON REINFORCED CONCRETE FOOTING.
2. INSTALL TERMITE SHIELD.
3. REPLACE DETERIORATED SILL.
4. CUT OFF AND REPLACE BOTTOM OF POST.
5. REALLIGN BENT MEMBERS TO SET PLUMB.



5 5 1-2 3 4 5 5

BENT 13 PHOTOELEVATION 3/16 NO SCALE

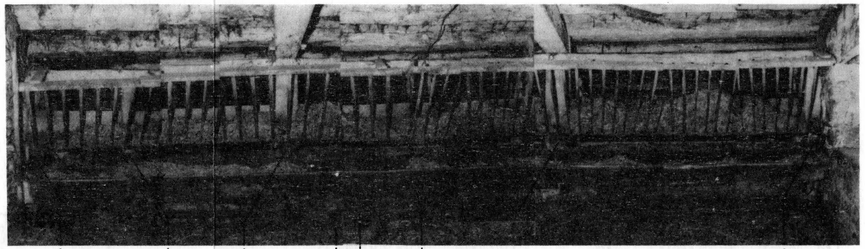
1. RESTORE STONE FOUNDATION WALL ON REINFORCED CONCRETE FOOTING.
2. INSTALL TERMITE SHIELD.
3. REPLACE DETERIORATED SILL.
4. CUT OFF AND REPLACE BOTTOM OF POST.
5. REALLIGN BENT MEMBERS TO SET PLUMB.



4 1-2 3 4 4

BENT 14 PHOTOELEVATION 4/16 NO SCALE

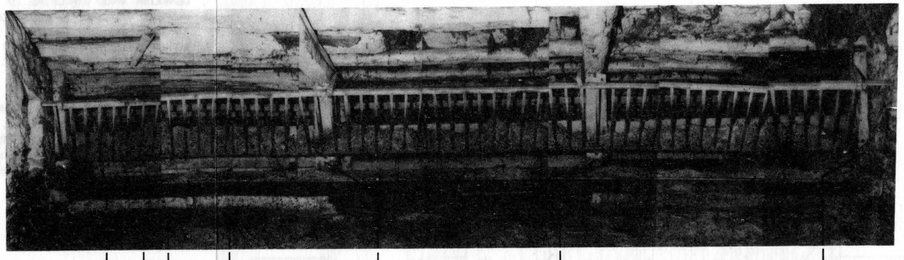
1. RESTORE STONE FOUNDATION WALL ON REINFORCED CONCRETE FOOTING.
2. INSTALL TERMITE SHIELD.
3. REPLACE DETERIORATED SILL.
4. REALLIGN BENT MEMBERS TO SET PLUMB.



4 4 4 1-2 3 4 4

BENT 15 PHOTOELEVATION 5/16 NO SCALE

1. RESTORE STONE FOUNDATION WALL ON REINFORCED CONCRETE FOOTING.
2. INSTALL TERMITE SHIELD.
3. REPLACE DETERIORATED SILL.
4. REALLIGN BENT MEMBERS TO SET PLUMB.



5 1-2 3 5 4 4

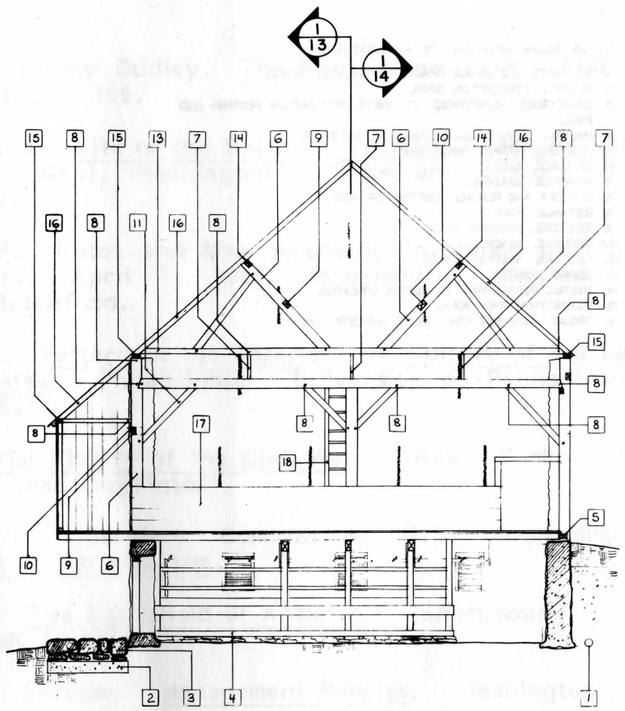
BENT 16 PHOTOELEVATION 6/16 NO SCALE

1. RESTORE STONE FOUNDATION WALL ON REINFORCED CONCRETE FOOTING.
2. INSTALL TERMITE SHIELD.
3. REPLACE DETERIORATED SILL.
4. REPLACE POST.
5. REALLIGN BENT MEMBERS TO SET PLUMB.

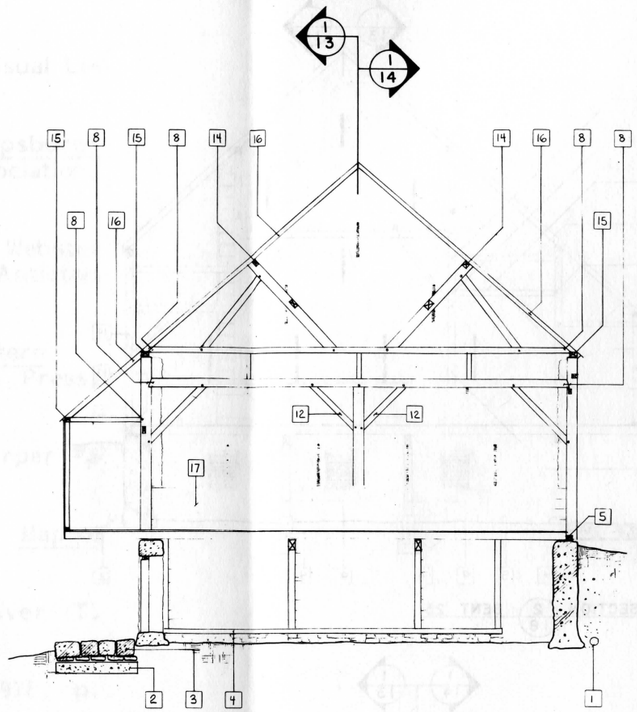
ORIGINAL BARN FIRST FLOOR BENTS

PREPARED	DRAWING NO.
SIEKKINEN DESIGNED	302 25000
SIEKKINEN DRAWN	PCIP PKG. 215
DONALD CHECKED	SHEET 16 OF 18
8-18-82 DATE	

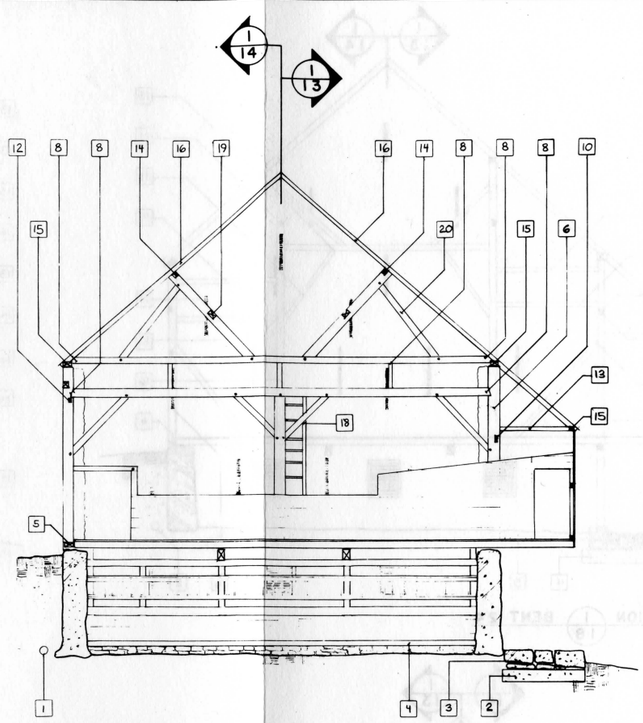
☆ GPO: 1977 777-388



SECTION (1/17) BENT 21



SECTION (2/17) BENT 22



SECTION (3/17) BENT 23

NOTES BELOW APPLY TO THE BENTS OF THE ORIGINAL BARN FOR BOTH ALTERNATIVES:

1. INSTALL FOUNDATION DRAIN.
2. INSTALL REINFORCED CONCRETE FOOTING.
3. RESTORE STONE WALKWAY.
4. REPAIR BASEMENT STORY BENT AND RESTORE ITS STONE FOUNDATION.
5. REPLACE SILL.
6. INSTALL METAL BAND TO DETER CHECKING.
7. RESET AND REPOSITION POST.
8. REPAIR JOINT.
9. INSTALL METAL BAND TO DETER CHECKING ON THE SOUTH BRACE.
10. REPLACE NORTH BRACE.
11. TREAT MEMBER FOR INSECT INFESTATION AND FILL VOID.
12. RESTORE BRACE.
13. REPLACE TIE BEAM.
14. REPLACE PURLIN.
15. REPLACE RAFTER PLATE.
16. REPLACE RAFTER.
17. RESTORE PARTITION WALL.
18. RESTORE LADDER.
19. REPLACE NORTH AND SOUTH BRACE.
20. REPLACE BRACE.

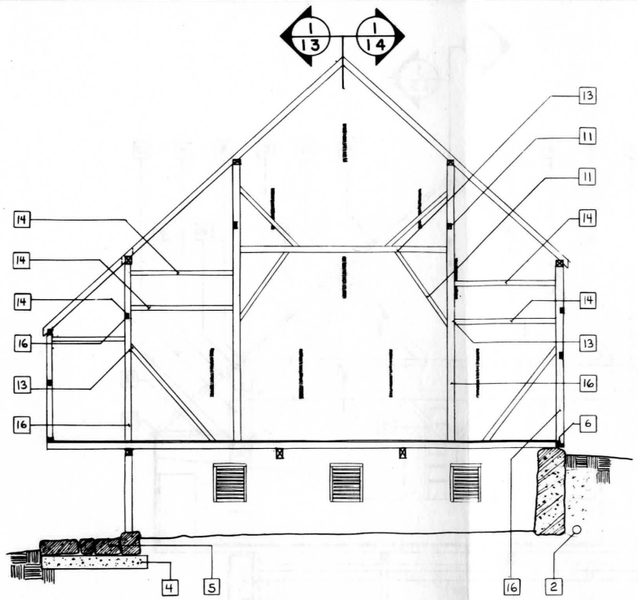
ORIGINAL BARN SECTIONS

10 0 10 20
SCALE OF FEET

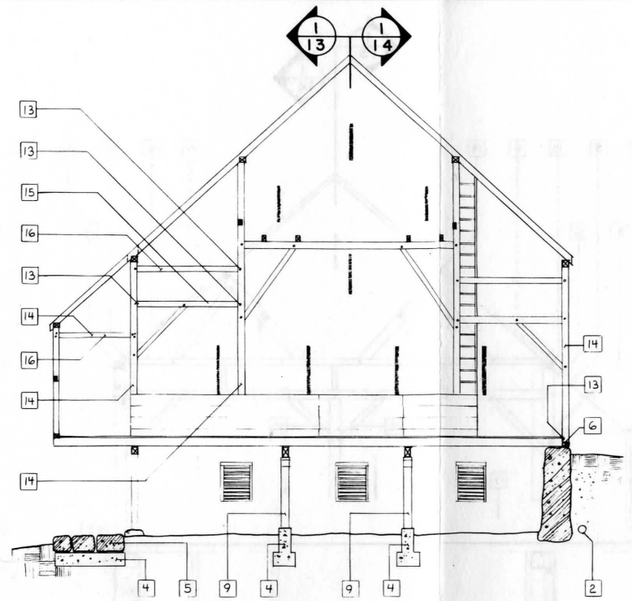
0 5m
METRIC SCALE

PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
MARSH SIEKKINEN	PCIP PKG. / SHEET
DRAWN	
DONALD	215 / 17
CHECKED	
8-18-82	OF 18
DATE	

★ GPO: 1977 777-999



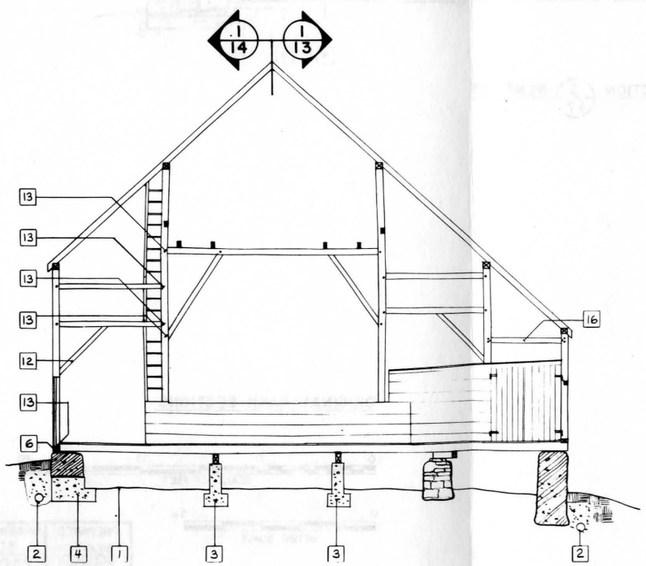
SECTION 1/18 BENT 24



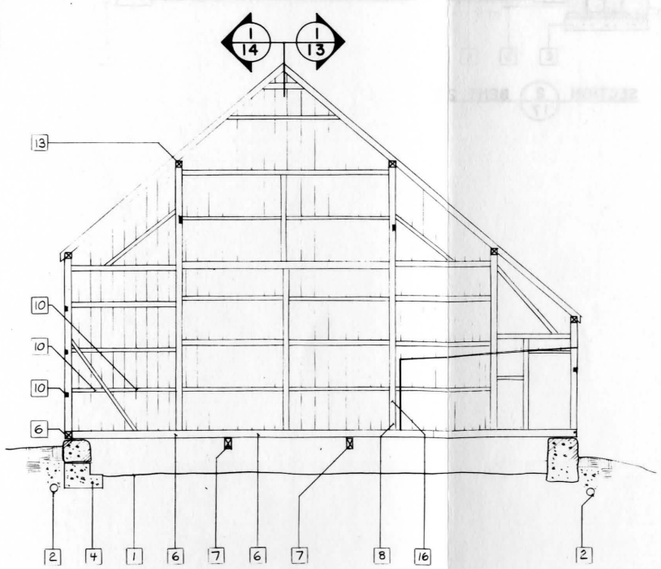
SECTION 2/18 BENT 25

NOTES BELOW APPLY ONLY TO ALTERNATIVE I:

1. EXCAVATE AND LOWER GRADE TO INDICATED LEVEL.
2. INSTALL FOUNDATION DRAIN.
3. CONSTRUCT REINFORCED CONCRETE FOUNDATION FOOTING AND PIER.
4. INSTALL REINFORCED CONCRETE FOOTING.
5. RESTORE STONE WALKWAY.
6. REPLACE SILL.
7. REPLACE GIRDER.
8. CUT OFF AND REPLACE BOTTOM OF POST.
9. REPLACE POST.
10. RESTORE MISSING GIRT.
11. REPLACE BRACE.
12. RESTORE MISSING BRACE.
13. REPAIR JOINT.
14. INSTALL METAL BAND TO DETER CHECKING.
15. REPOSITION TIE BEAM.
16. TREAT MEMBER FOR INSECT INFESTATION.



SECTION 3/18 BENT 26



SECTION 4/18 BENT 27

ADDITION 3 SECTIONS

10 0 10 20
SCALE OF FEET

0 5m
METRIC SCALE

PREPARED	DRAWING NO.
SIEKKINEN	302
DESIGNED	25000
MARK SIEKKINEN	PCIP PKG. / SHEET
DRAWN	215 / 18
DONALD	OF 18
CHECKED	
8-18-82	
DATE	

GPO: 1977 777-005

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As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The Department has also major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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